SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVII January, 1973 No. 1

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Vol. XXVII | January, 1973 | No. 1

Arizona Cactus and Native Flora Society

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COVER: *Verbesina encelioides*, photo taken Nov. 28, 1972

Desert Botanical Garden of Arizona

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Editor's Notes

1972 was a GOOD year:

The new Herbarium Building was dedicated;

The Garden participated in the successful jojoba program sponsored by the OEO working with the San Carlos Apache Indian Reservation;

Your Director was given the Distinguished Citizen Award for 1972 by the University of Arizona;

The National Science Foundation awarded a $34,000 grant to the Desert Botanical Garden for research leading to a monograph on the Agavaceae;

Dr. Howard S. Gentry, our Research Botanist, was recently in Mexico City where he was appointed Honorary Vice President of the Latin American Congress of Botany;

We have added over 2000 sheets (pressed, dried and identified individual plants) to our Herbarium, which brings the total to 7500-plus. We are now rapidly approaching the point when we will have the third-largest herbarium in the state of Arizona, outranked by the University of Arizona and Arizona State University.

The above, and other recognitions, did make for a GOOD YEAR.

Many inquiries have been made of us about the many WILDFLOWERS now in bloom in the desert surrounding Phoenix. It seems that the "early-late" or "late and early" rains during October and November (normally dry months) have given certain plants the impetus to burst out in color at the "wrong" time. It has been remarked that we have an "upside-down" flowering period this year. The usual cold weather of late December and January will forestall any extensive mass of color and will cause the plants to hold back further blooming until late February through April.

The almost continuous rains of October and November caused the Fairy Duster (**Calliandra eriophylla**) shrub to explode in nearly red flowers early in November instead of putting out pale-pink to pink flowers in March and April as it usually does.

Other plants we noticed in flower during our December field trips were: **Eriogonum fasciculatum** (Buckwheat), **Pectis papposa** (Chinchweed), **Amsinckia intermedia** (Fiddleneck), **Salazaria mexicana** (Bladder-sage), **Beloperone californica** (Hummingbird bush), **Gutierrezia sarothrae** (Snake-weed), **Lotus rigida** (Rock-pea), **Calliandra eriophylla** (Fairy-duster), **Melampodium leucanthum** (Blackfoot daisy), **Baileya multiradiata** (Desert marigold), **Euphorbia eriantha** (Desert poinsettia), **Viguiera deltoidea** (Parish viguiera), **Lycium pallidum** (Wolf-berry), **Allionia incarnata** (Trailing four o'clock), **Nicotiana trigonophylla** (Desert tobacco bush), **Euphorbia sp.** (Desert mat).

The CLASSIFICATION LIST for the 26th Annual Cactus Show, February 18th through 25th is included with this Bulletin. Please look it over right away and begin to get your entries ready to show. There are

(Continued on Page 6)

Mexican Cactus

ORGANO
Cephalocereus
hoppenstedtii
Cactaceae

Tehuacan, in south central Mexico, in the southern portion of the state of Puebla, is one of the richest areas in Mexico for finding different species of cacti. We used to travel slowly among the mountains on unpaved roads, but now pavement is being extended into and over the mountains in the area and driving is much easier. Still, if you want to get to the most interesting places it is advisable to take a Spanish-speaking guide with you.

As you travel about twenty miles southwest of Tehuacan to Zapotitlan you will begin to see what look like "old man" cacti on the mountainsides and into the valleys. These are **Cephalocereus hoppenstedtii**, looking in the distance similar to the "old man" but distinguishably different at closer range. They are about thirty feet tall, with single stems. Many spines conceal the closely appressed ribs, and a dark cephalium four to six feet long is found on the southwest side of the upper portion of the plant.

A young specimen of *Cephalocereus hoppenstedtii.*

You will notice that the top portions of each plant curve or lean toward the southwest, possibly because of the prevailing winds.

These plants grow along with **Neobuxbaumia tetetzo** which are similar in appearance at a distance but differ in that they are branched, do not have a tapered apex nor bear a cephalium.

C. hoppenstedtii (Weber) was first described by Karwinsky in 1837 as **C. columna-trajani**, and through the years has been shunted into the genera Pilocereus, Pachycereus, Mitrocereus, and, in 1960, into the genus Haseltonia as **H. columna-trajani** by Backeberg.

The plant has twenty or more low, close ribs, hidden under 14 to 18 short white radial spines from each areole. In addition, there are five to eight brownish central spines about three inches long. Flowers are bell-shaped, white with pink tips, and about three inches long. Fruit is ovoid, about an inch long and an inch wide, whitish in color, and contain red pulp and black seeds.

C. hoppenstedtii is grown in many collections and is quite attractive as a juvenile because of the large central spines and the body that tapers to its base. It never grows very large in collections. We have had beautiful ten to twelve foot plants rot at their bases.

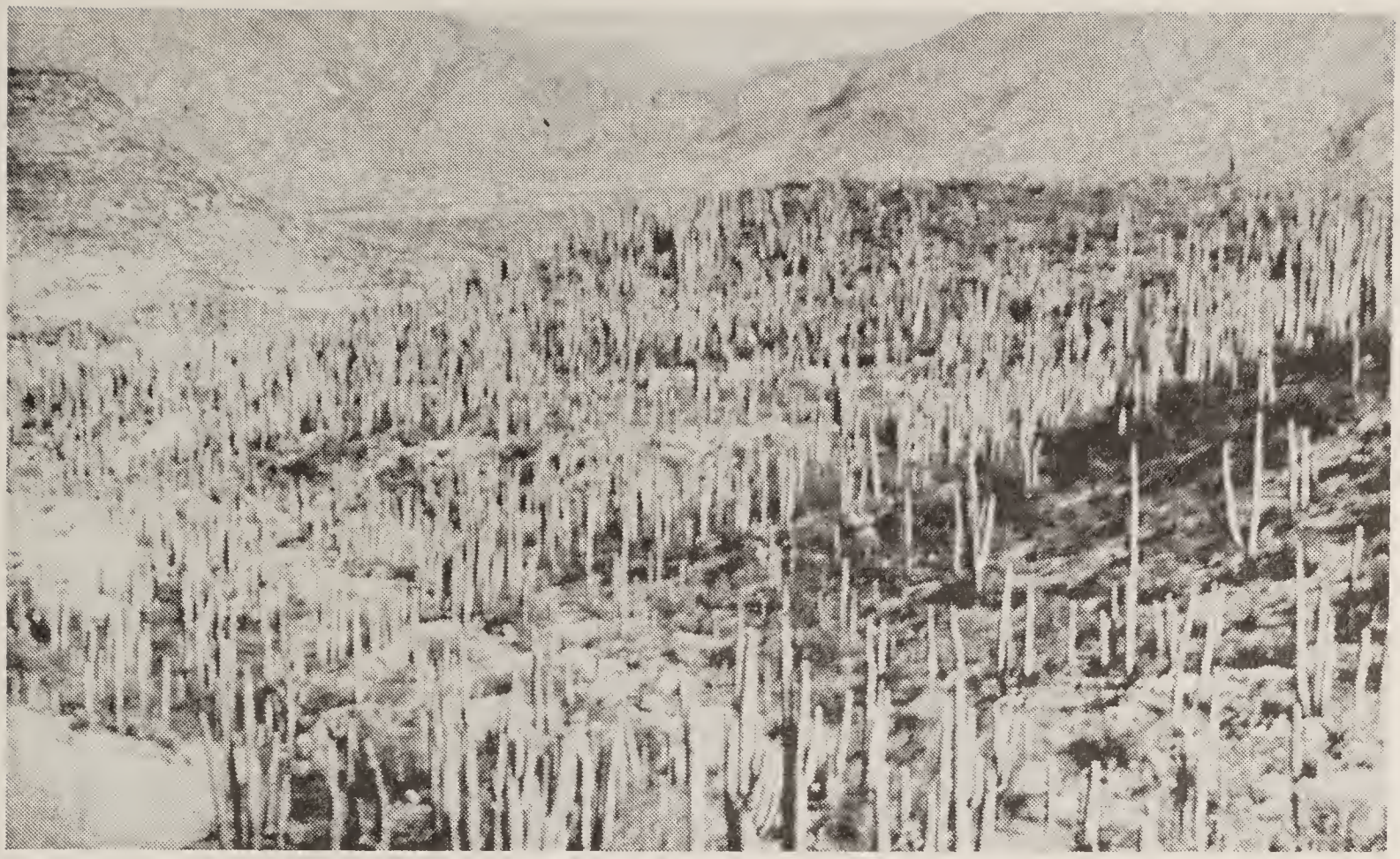
Type Locality: Zapotitlan, near Tehuacan, Mexico.

Distribution: Southern Mexico.

REFERENCES:

Backeberg, Die Cactaceae
Bravo, Las Cactaceas de Mexico
Britton & Rose, Cactaceae

—WHE



This habitat picture of *Cephalocereus hoppenstedtii* and *Neobuxbaumia tetetzo* was taken on the 1966 collecting trip to Tehuacan. Photo at lower left is a pure stand of *C. Hoppenstedtii.*

Below: In late November, because of fall rains, Crown-beard (*Verbesina encelioides*) flowered in spring-like profusion in nearby Papago Park.

IF YOU PRUNE YOUR AGAVES—

A Garden member recently sawed off the bottom leaves of some Agaves in his garden and found that his hands and forearms began to itch painfully a short time later and continued to itch for several days. We were able to pass the following first-aid ideas to him, and you may also care to have this information, BUT —

The Desert Botanical Garden is not in the practice of medicine. See your own M.D. before using any creams or lotions.

(1) Wash off the Agave juice with ONLY water.

(2) Do not use soap of any kind, as this tends to spread the itch.

(3) After thorough rinsing with WATER, you may try swabbing the area with undiluted vinegar, as the juice is quite alkali and the vinegar may neutralize it, since vinegar is a mild acid.

(4) Not all Agave juices act like poison ivy on the skin. The cause of skin reaction (itching and blisters) is the presence of STEROIDS. The concentration of steroids varies with the species and with the season: dry months, higher concentration; wet months, lower.

(5) Chemists have been analyzing Agaves for some years, but they have not yet figured out the "poison ivy element".

PRECAUTIONS:

(1) The sooner Agave juice is washed off, the milder will be the symptoms. Remember, wash with WATER.

(2) Wear a long-sleeved shirt as well as gardening gloves.

(3) A split leaf of an aloe may help stop the itching.

(4) If the same **Agave americana** (the most often used agave in landscaping) gave you no trouble last time, take precautions anyway. This time the itch-producing steroid may be more highly concentrated.

EDITOR'S NOTES—

(Continued from Page 3)

classifications for cacti, other succulents, arrangements, dish gardens, button gardens, paintings in oil or watercolor, colored and black and white photography. We always have an outstanding and colorful show, frequently mentioned in national magazines, so circle the dates on your calendar and come to the Cactus Show either as exhibitor or as a spectator.

We certainly are indebted to our VOLUNTEERS who give their time to the Garden and its Bookstore. Some of them have "helped out" for more than five years, coming a morning, a day, or even more on a regular, dependable basis. If we can't show our thanks sufficiently, we can at least name them here: Lela Turner, Margaret Jenkins, Helen Friedrichs, Rubie and Paul Neuman, Florentine Gebert, Mildred Hunt, Dorothy Rieff, Joy Lee Schroeder, Barbara Worbington, Carl and Eleanor Groschke, Peg Gill, Henrietta Peterson, and Helen Mitchell. Hats off to all of them.

We're in need of a volunteer who will keep the Saguaroland Bulletin indexed up to date. Warner Dodd indexed it up to Vol. XVII, but the nine last volumes need card-indexing. We also need a couple of volunteers to help at the Bookstore on Tuesdays, and we could use a "backlog corps" of several volunteers whom we can call on when we need extra help at the Bookstore. Can you help? Very little experience is needed.

Removing WEEDS from the many plant beds at the Garden has been a real problem this past fall because of the heavy rains. The ground was either too muddy to work in, or we no sooner removed the weeds and cultivated the ground than we found more weeds sprouting in the cultivated areas with the help of additional showers. It has certainly been hard to keep ahead of the weeds, but we are winning the battle and should complete that "fall" job by the end of December.

ASPECTS OF THE DESERT

Hummingbird Bush (**Beloperone californica**), seen here with Smoke Trees, blooms at almost any time of the year. Its honeysuckle-like flowers attract hummingbirds and bird watchers, especially in winter months when it is visited by several species of desert-wintering hummingbirds.

Arizona Wildflower

BLUE-EYED GRASS
Sisyrinchium demissum

Iridaceae
Iris Family

This delicate little plant is grasslike in the resemblance of its tall, narrow leaves to real grass leaves. Aside from that there is no relationship: Irises and grasses are even seventy-seven pages apart in "Arizona Flora" — which isn't the way a real botanist would put it, but does show that there isn't a connection between the families.

Sisyrinchium demissum grows in the moist mountain meadows from Texas to California and north to Idaho and Washington. From a short, fibrous root-stock grow grasslike leaves, less than an eighth of an inch wide and about six inches long. These are mostly basal leaves. The stems are slender and flat and reach a height of twelve inches or less. The stems are commonly unbranched although, as you see in the photographs on this page, some stems do branch simply.

Flowers appear in few-flowered terminal umbels. The bracts beneath the flowers are papery and green, and the flowers, a delicate blue-violet in color with darker veins, are fragile and wither soon. In size the bracts are up to three-quarters inch long, and the pètals two-fifths of an inch long. The entire blossom is about an inch across.

Blue-eyed Grass can be found in bloom at any time from June to September. The accompanying pictures were taken on August 3rd in Navajo County, Arizona, between the towns of Springerville and Maverick. Elevation there was somewhat above 7000 feet.

In Arizona this plant is found from the San Francisco Peaks near Flagstaff and the White Mountains south to the Huachuca and Rincon Mountains in Cochise and Pima counties.

REFERENCES:

Armstrong, Field Book of Western Wild Flowers
Kearney & Peebles, Arizona Flora

—LD

Arizona Cactus

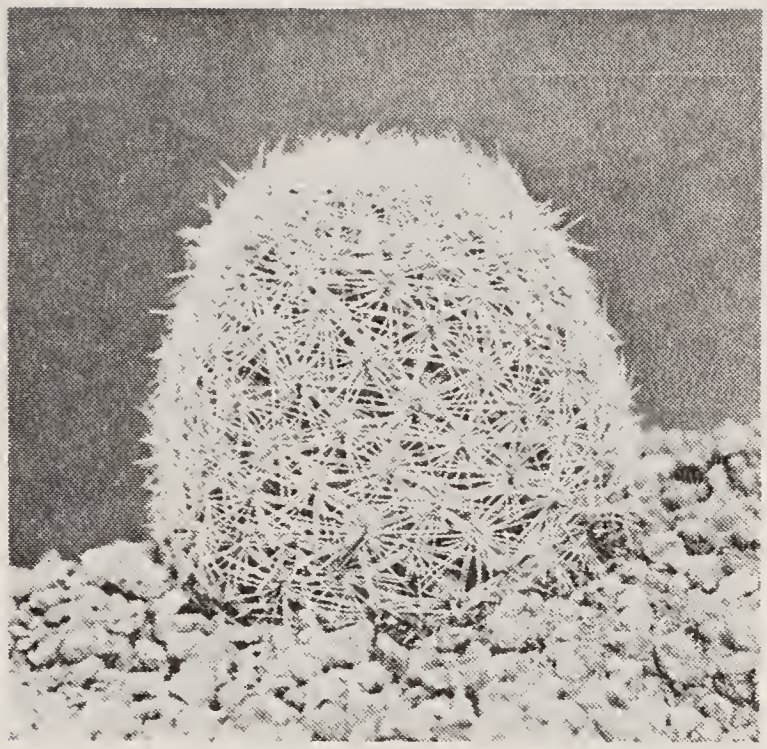
OLIVIA'S PINCUSHION
Mammillaria oliviae

Cactaceae

This is a lovely little whitish pincushion that was first described by C. R. Orcutt in 1902 who named it in honor of his wife. It was found east of Tucson at Vail, a former flag station on the Southern Pacific Railroad.

It is a short-cylindric plant about 3½ to 4 inches tall and 1½-2 inches thick. It sometimes becomes cespitose, but is usually simple. Tubercles are ovoid; axils naked. There are 25 to 36 radial spines, white or on some plants reddish-brown; radials are slender and ¼ inch long. One to three central spines with the lower one erect. Centrals are white or sometimes tipped with brown. Flowers 1¼ inches across, magenta in color, with the style light pink and the stigma lobes olive-green. The clavate fruit is bright red, one inch long, containing small black seeds.

We have found the plant growing along with **M. microcarpa** on the north side of the Catalina Mountains where some of the single plants had hooked spines and some cespitose plants had stems with straight spines and stems with hooked spines, all on the same plant. This is an indication of intergradation of the two plants.



This is a delightful plant to cultivate, as the flowers are quite large and the short spines will not bite the hand that pots them.

Benson now considers **M. olivae** a variety instead of a separate species: **M. grahamii var. oliviae.**

Type Locality: West of Vail, Arizona, Pima County.

Distribution: Rocky or gravelly soils in the desert and lower grasslands at about 3000 ft. elevation in central Arizona and Sonora.

REFERENCES:

Benson, Cacti of Arizona
Britton & Rose, Cactaceae
Earle, Cacti of the Southwest

——WHE

Above: *M. oliviae* plant about 2 in. tall. At left: One plant with two different heads, evidence that *M. oliviae* intergrades with *M. microcarpa.* On following page: *M. oliviae* in flower.

1973 CLASSES IN FLOWER PRESERVATION

Those very popular flower preservation classes, taught last year by Janet Alsever, will be repeated this year.

Members of the 1972 classes, who have formed an "alumnae group" called the Flower Preservers, will sponsor three classes this spring. Each class, limited to twenty members, will meet for four two-hour sessions. Mrs. Alsever will teach all classes.

The method developed by Mrs. Alsever uses special drying sands and special techniques and produces unusually fine results.

DATES AND TIMES

Wed. morning class, 9-11 a.m., March 14, March 28, April 4, April 11.

Wed. afternoon class, 1-3 p.m., same as above.

Sat. morning class, 9-11 a.m., March 17, March 31, April 7, April 14.

LOCATION

All classes will be held in the Garden's Webster Auditorium.

REGISTRATION AND FEES

Preference will be given to Garden members. After February 1st, enrollment will be opened to non-members. Fees cover: four lessons, textbook and materials (including flower preservation kit, oolitic sand, shadow frames and flowers.

Garden Members	$26.95
All Others	31.95

The additional fee of $5.00 for non-members will be applied to Garden membership.

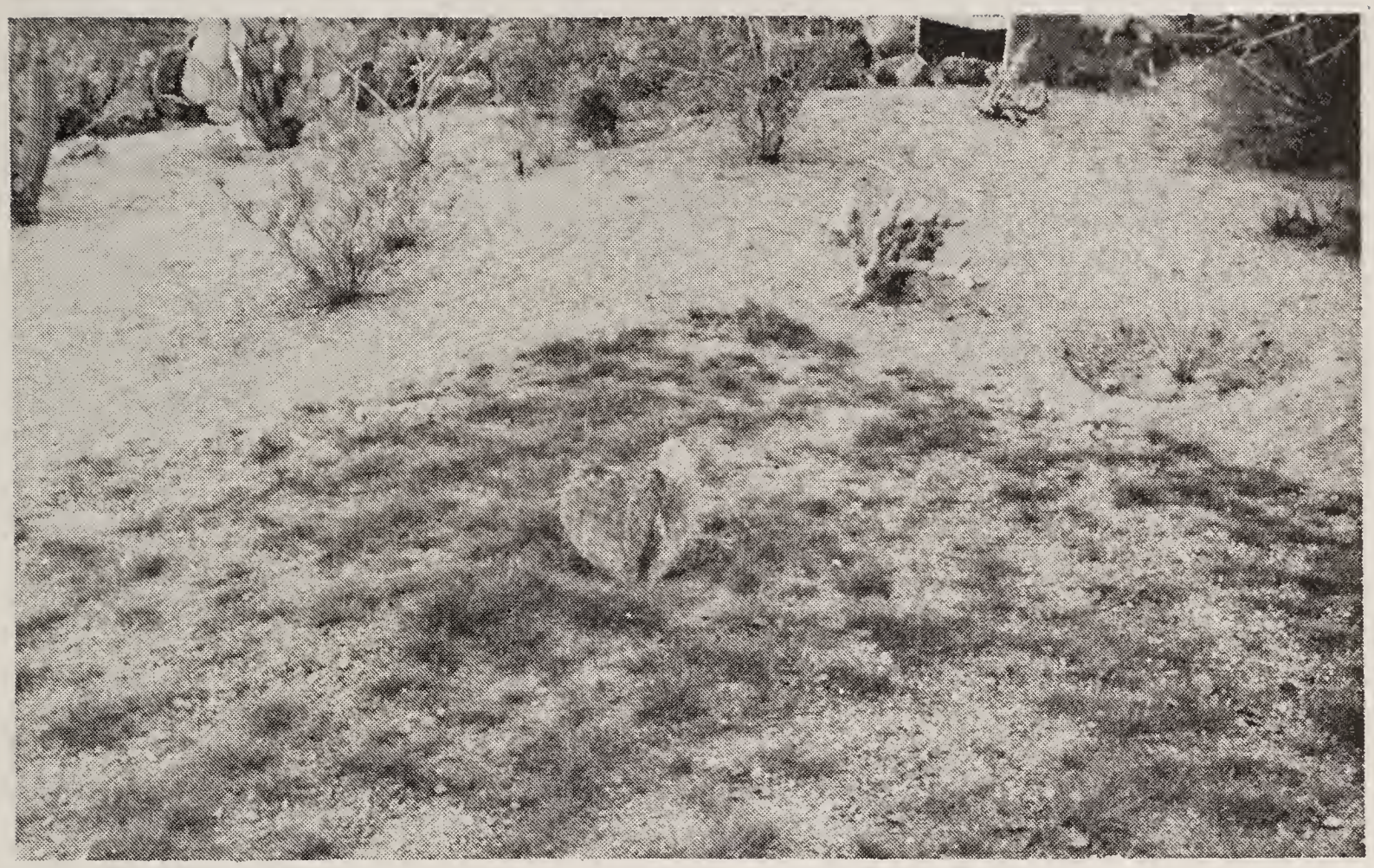
A deposit of $15.00 must accompany each registration.

FOR FURTHER INFORMATION

Telephone Joan Smith at 274-2725 after 4 p.m.; Mrs. Alsever at 956-6184.

Bright magenta flowers of *M. oliviae* & *M. microcarpa*.

INSTANT LAWN



Arizona's Sixweek Grass makes what looks like a velvety though spotty lawn. It came as part of nature's bounty after the autumn rains, and we had to use hoes, not lawn mowers, to clean two crops of it out of the Garden's cactus beds. Fortunately, it is shallow-rooted, but the job was back-breaking and swear-inducing.

HOW MANY?

Arizona is well endowed with plants. Kearney & Peebles', "Arizona Flora" tells us that the flora of Arizona is comprised of 132 families, 907 genera and 3370 species — and since the latest revision of the book was written in 1950 (copyright in 1951) there are certainly quite a few newly-found plants to bring the total much higher.

The same edition lists the ten largest families. Here they are in order of size.

Compositae—Sunflower Family, 543 species
Graminaea—Grass Family, 367 spp.
Leguminosae—Pea Family, 287 spp.
Scrophulariaceae—Figwort Family, 112 spp.
Cruciferae—Mustard Family, 105
Cyperaceae—Sedge Family, 100 spp.
Polygonaceae—Buckwheat Family, 94 spp.
Euphorbiaceae—Spurge Family, 94 spp.
Cactaceae—Cactus Family, 71 spp.
Rosaceae—Rose Family, 69 spp.

ERRATUM
December 1972 issue, p. 111, line 3
read "Botanical".
(We have an excuse, but no one would believe it.)

This section of the Garden, a bed approximately thirty by twenty feet in area, is now dedicated to Herbert Bool and planted with cacti that he himself had grown.

Mr. Bool, who died on April 26, 1971, was one of the founding members of the Desert Botanical Garden when it was organized in the early 30s. He and Mrs. Bool (Secretary of the Executive Board) may well have been the "inventors" of the now-familiar cholla log planter for small cacti. Certainly they developed the idea independently. "Sandyland", where they first grew small cacti from seed and seedlings, developed into a large commercial nursery dealing in large and small cacti and leaf succulents. Over the years the Bools have given many plants to the Garden. Whenever they found new plants for cultivation in their nursery they gave several of the plants to us.

Now the nursery, on Phoenix' busy Camelback Road, is about to close, and in its place will grow tall city buildings. Mr. Bool wanted the Garden to have his largest and finest plants, and Mrs. Bool has generously seen to it.

The magnificent condition of these plants is apparent. Some of them Mr. Bool tended for over twenty years. Cacti include Star Cactus (**Astrophytum**) that are large for their kind, Arizona and Mexican Organ Pipe Cacti, a multi-headed Barrel Cactus, several **Cephalocereus palmeri**, and two very large clumps of Senita (**Lophocereus schottii**) which would be any collector's treasure. Plants of this last kind are rarely so big and heavy in cultivation. To move just one clump requires the use of a tractor and other heavy-duty equipment. Not long ago the Garden was offered (and refused) $1000 for a smaller Senita clump, so you can see that we have received a generous gift. More important, however, is that this group of cacti will always remind us of a great friend of the Garden.

GARDEN ACTIVITIES

JANUARY

Tues.	2nd	CACTOMANIACS meeting	8:00 P.M.
Thurs.	4th	LECTURE—Arizona Wildflowers	3:00 P.M.
Wed.	10th	CLASS—Desert Plants	3:00 P.M.
Thurs.	11th	LECTURE—Arizona Birds, etc.	3:00 P.M.
Sat.	13th	FIELD TRIP—Lake Pleasant	8:30 A.M.
Wed.	17th	CLASS—Succulent Plants	3:00 P.M.
Thurs.	18th	LECTURE—Arizona Scenics	3:00 P.M.
Tues.	23rd	BONSAI SOCIETY meeting	7:30 P.M.
Wed.	24th	CLASS—Cultivation of Succulents	3:00 P.M.
Thurs.	25th	LECTURE—Cacti of Mexico	3:00 P.M.
Wed.	31st	CLASS—Desert Trees & Shrubs	3:00 P.M.

TWENTY-SIXTH ANNUAL

CACTUS SHOW

February 18th to and
including February 25th, 1973

Sponsored by
The Phoenix Gazette and the
Desert Botanical Garden

Webster Auditorium
Desert Botanical Garden
Papago Park

entrances at
5800 E. Van Buren & 6400 E. McDowell
Phoenix, Arizona
Telephone 947-2800

SHOW OPEN DAILY 9 A.M. TO 5 P.M. — ADMISSION FREE

1-73

CLASSIFICATIONS

SECTION I **CACTI***

Class A. **POTTED** (Limited to 3 named entries per div.)

Div. 1. OPUNTIA
2. CEREUS
3. ECHINOCEREUS
4. REBUTIA
5. CHAMAECEREUS
6. LOBIVIA
7. ECHINOPSIS
8. ARIOCARPUS
9. STENOCACTUS
10. FEROCACTUS
11. ECHINOCACTUS
12. GYMNOCALYCIUM
13. ASTROPHYTUM
14. THELOCACTUS
15. ECHINOMASTUS
16. CORYPHANTHA
17. MAMMILLARIA
18. NOTOCACTUS
19. NEOPORTERIA
20. PARODIA
21. SEEDLINGS
22. TURBINOCARPUS
23. PEDIOCACTUS
24. Any other Species**

Class B. **CRESTED**

Div. 1. Crested Cacti — own root
2. Crested Cacti — grafted

Class C. **MONSTROSE**

Class D. **GRAFTED**

Class E. **COLLECTIONS** (5 different species of a genus)

SECTION II **SUCCULENTS OTHER THAN CACTI***

Class A. **POTTED** (Limited to 3 named entries per div.)

Div. 1. AEONIUM
2. AGAVE
3. ALOE
4. BRYOPHYLLUM
5. CRASSULA
6. DUDLEYA
7. ECHEVERIA
8. EUPHORBIA
9. GASTERIA
10. HAWORTHIA
11. KALANCHOE
12. LITHOPS
13. MESEMBRYANTHEMUM
14. PLEIOSPILOS
15. SEDUM
16. STAPELIA
17. YUCCA
18. BROMELIADS
19. SEEDLINGS
20. HOYA
21. Any other Species**

Class B. **COLLECTIONS** (5 different species of a genus)

*Grown by exhibitor at least 3 months.

**Additional Divisions will be set up when 3 or more species of a genus are entered.

SECTION III **DESERT TREES AND SHRUBS***

Class A. TREES
Class B. SHRUBS
Class C. DESERT BONSAI
Class D. SEEDLINGS
Class E. ANY OTHER DESERT PLANTS

SECTION IV **ARRANGEMENTS** (One entry per division in each class)***

Class A. **DISH GARDENS, planted** (Accessories permitted)
Div. 1. CACTI
2. OTHER SUCCULENTS
3. CACTI & OTHER SUCCULENTS
Class B. **TERRARIUM** (Cacti and/or other Succulents)
Class C. **CENTERPIECES** (Accessories permitted)
Div. 1. CACTI
2. OTHER SUCCULENTS
3. CACTI & OTHER SUCCULENTS
4. NATURAL, DRIED DESERT MATERIAL
5. MEXICAN THEME
6. AMERICAN INDIAN THEME
7. ANY OTHER

The above Divisions of Class C will apply to Classes D through H.

Class D. **ARRANGEMENTS on or AGAINST THE WALL** (Accessories permitted)***
Class E. **CORSAGES**
Class F. **BUTTON** (Arrangement on a button)
Class G. **MINIATURE ARRANGEMENTS** — under 5" high
Class H. **SMALL ARRANGEMENTS** — 5" to 8" high
Class J. **HANGING BASKETS**
Class K. **STRAWBERRY JARS**
Class L. **PATIO PLANTERS** (Cacti and/or Desert Plants)

SECTION V **ARTS** DESERT SUBJECTS (exhibitor's work)

Class A. **BLACK & WHITE PHOTOGRAPHS** (limit, 4)
Class B. **COLORED PHOTOGRAPHS** (limit, 4)
Div. 1. COLORED PRINTS
2A. TRANSPARENCIES 2x2; 2B, 3x5

***"Desert Spoons" prohibited. No artificial foliage or flowers permitted. No artificial coloring permitted.

SECTION V **ARTS** - continued:

Class C. **OIL PAINTINGS** (limit, 3 framed original entries)
Class D. **WATERCOLOR** (limit, 3 framed original entries)
Class E. **DRAWINGS** - ink, pencil, pastel, limit, 3
Class F. **ANY OTHER MEDIUM**
Class G. **NATURAL DESERT WOODS** (uncarved), limit, 3

SECTION VI **EDUCATIONAL EXHIBITS**

SECTION VII **JUNIOR CLASS** (Elementary School students enter as a group in any of preceding classifications.

SECTION VIII **OPEN: NON-COMPETITIVE**

The Twenty-sixth annual Cactus Show will be held in the Webster Auditorium, Desert Botanical Garden, February 18-25th, and is open to all persons wishing to enter Succulent Plants, Arrangements, Photographs (B. & W. or Colored), Paintings (desert subjects), or Desert Woods. No entry fee is charged.

All entries in Section V (Arts) must be entered by Wed., Feb. 14th, 5 P.M. All other entries can be entered from Thurs., Feb. 15th, 9 A.M., to Sat., Feb. 17th, 1 P.M.

Judging will be held at 3 P.M., February 17th.

Sweepstakes will be awarded for the most Blue Ribbons accumulated in the four large Sections; small trophies will be given for outstanding exhibits in the various Classes, ribbons for 1st, 2nd, 3rd, and Honorable Mention, if merited, in each classification.

Scale of points is as follows:

CACTI & SUCCULENT SPECIMEN PLANTS

Condition	45
Nomenclature	15
Rarity	10
Size or degree of maturity	10
Staging	20
	100

BUTTON, MINIATURES and SMALL

Scale	40
Design	30
Color Harmony	20
Condition	10
	100

ARRANGEMENTS and DISH GARDENS

Design	30
Color	20
Relationship	20
Originality	10
Distinction	10
Condition	10
	100

CORSAGES

Technique	15
Design	25
Color	15
Suitable combination of material	15
Distinction	20
Condition	10
	100

The "Handbook for Flower Shows," published by the National Council of State Garden Clubs, Inc., will be used as the basis of exhibiting, point scoring and judging of all Arrangements. Dish Gardens, Miniatures, etc. The Standard stystem of Judging will be used. The decision of the Judges will be final.

Exhibits may be removed only after 5 P.M., Sunday, Feb. 25th.

The Garden will take all due care and caution but will assume no responsibility for loss or breakage, or for unclaimed exhibits.

3M—12-72

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W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

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Vice President.....Edward Burrall
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Cover: Aberrant growth of a Saguaro

Desert Botanical Garden of Arizona

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Editor's Notes

February is always a busy month, with classes, lectures, field trips and, of course, it is high-lighted with our **26th Annual Cactus Show**, Sunday, the eighteenth, to Sunday, the twenty-fifth.

Again this year, the Show will be co-sponsored by the Phoenix Gazette. In the past the Gazette has given us invaluable coverage prior to and during the Show, with photographs, human interest stories and reports of prizes awarded to our exhibitors. They keep before the public our distinction of presenting the only show of its kind in this country.

A Classification List was included in the January issue of the Bulletin. We hope you will look it over carefully and decide to enter exhibits of your plants, arrangements, woods, paintings, or photographs. Notice that all exhibits in the arts category have to be entered by Wednesday, February 14th, at 5 p.m. All other entries may be entered from Thursday, the fifteenth, at 9 a.m. through Saturday, the seventeenth at 1 p.m.

Bring your winter visitors to this busy once-a-year show. You'd be smart to come during the week, any day from nine to five, because it is sure to be crowded on Sundays. During the week you will be able to get much better looks at the exhibits.

It is possible that the **Flower Preservers** will stage a small show in conjunction with the Cactus Show. This will be a real opportunity for you to see the fascinating work they do. Also possible are demonstrations by these talented ladies.

As of mid-January more than 25 persons have already volunteered to help us during the show by acting as hosts, hostesses, guides, salespersons, tabulators, typists, and just about anything useful. We can still use more, so if you can give a day or two, please phone the Garden at 947-2800. We guarantee you will really enjoy yourselves "behind the scenes".

This is the time of year when many desert gardeners thin out their cactus and succulent beds and give the small plants to the Garden to be sold during the Cactus Show. Small plants are especially popular with our winter visitors who wish to bring small gifts back to the folks at home.

As announced in the January issue, **Classes in Flower Preservation** will again be held at the Garden this spring, beginning on March 14 and ending on April 14. They will be sponsored by the Flower Preservers and taught by Janet Alsever on Wednesday mornings, Wednesdays afternoons, and Saturday mornings. We urge you to register as soon as possible, as each class is limited to twenty persons.

The Garden's booklet **Cactus and Succulents and How To Grow Them** has just been reprinted with an issue of 15,000 copies that should last us for two years. This useful little book was written and published by Scott Haselton in Pasadena in 1945. He printed over 150,000 copies. In 1966 the Garden purchased his unsold copies and the publishing rights to the booklet. We replaced the advertising copy with ads of our own and added it to our Science Bulletins as Number Five. Thirty-five thousand copies have been printed by the Garden so far. A large number of the booklets are wholesaled to National Parks

(Continued on page 24)

Mexican Cactus

GARAMBULLO
Myrtillocactus geometrizans
Cactaceae

Myrtillocactus geometrizans is a large tree-like cactus that grows in several forms in central Mexico from San Luis Potosi to Oaxaca. It grows in dense stands, so much so that it is hard to make a path between the largest plants. When some highways were straightened and widened between San Luis Potosi and Queretaro large windrows of garambullos were piled on each side of the road by road construction bulldozers. The uprooted plants remained there for years, slowly deteriorating.

Myrtillocactus is one of several plants that have two or more blossoms (followed by fruits) in an areole. Sometimes up to nine fruits may be seen clustered at an areole.

This is a densely compacted, much branched plant, having a somewhat flattened yet full head. The young curved 4-angled to 6-angled branches give a blue appearance to the outward parts of the plant. These branches or stems grow longer and new branches emerge from the stem until the plant is twenty to twenty-five feet tall and thirty to forty feet wide, a massive cactus on a short trunk.

Flowers are small, diurnal and orange, with a short tube and spreading petals. The maximum size is about three-eighths

Chevron shadings on young Garambullo record separate growth periods.

Growing in the Garden, this plant is eleven ft. tall, nine ft. broad.

of an inch across. Fruits are under one-half-inch in size, are purplish, globose and edible. They contain small black seeds. The fruits, also known as garambullos, are sold in local markets or by children along the roadside. They are served fresh or dried and look and taste like raisins.

This is an easy plant to grow in your collection from stem cuttings brought from dealers. Stems will root readily during hot weather. Water them after the new roots emerge and you will be most happy to see the new growth on the apex of the stems produce a bluish bloom that later becomes dark green. Care should be taken not to let frost burn the tender apex.

The plant was first described by Martius as **Cereus geometrizans** in 1837. Then Console included it in the genus Myrtillocactus in 1897.

Type locality: Mexico

Distribution: San Luis Potosi, Oaxaca.

REFERENCES

Bravo, Las Cactaceas de Mexico
Britton & Rose, Cactaceae

—WHE

Arizona Wildflower

GOLDEN-TOP

Lamarckia aurea

Graminiae
Grass Family

Last month we wrote about an iris that was called a grass (**Sisyrinchium demissum**, Blue-Eyed Grass). Now we are dealing with a real grass, and, to be honest, it shouldn't come under the heading of wildflower at all. It isn't even a native of Arizona, but it is such an eye-catcher that we think it should be mentioned here.

Golden-Top is a low, many-stemmed annual grass, four to twelve inches high. The flower-heads (later, seed heads) are all crowded to one side of the stem in dense panicles that look like a thick fringe two to three inches long and an inch wide.

What makes this grass so attractive is that the panicle, besides being thick and strangely placed, is a striking shiny golden-yellow. It was introduced to America by accident and is found growing wild from Texas to Arizona and southern California, and in the northern part of Mexico where it grows on open ground and waste places along the roadsides, and is conspicuous but not frequent.

Golden-Top was once a fairly popular ornamental plant, but, as is sometimes the case, it seems to be out of style at the moment. That's a pity, because it is very easy to grow, and looks sunshiny on even cloudy days.

Distribution includes Roosevelt in Gila

County, Canyon Lake in Maricopa County, and Tucson in Pima County, Arizona.

REFERENCES

Bailey's Hortus
Gould, Grasses of the Southwestern United States
Kearney & Peebles, Arizona Flora
Royal Horticultural Dictionary of Gardening

—LD

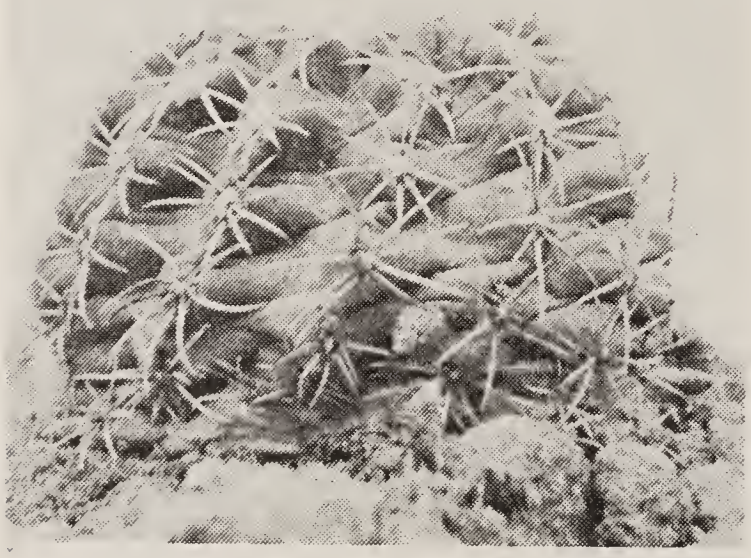
Arizona Cactus

COLORADO DRY CACTUS

Coloradoa mesae-verdae

Cactaceae

This small baseball-sized plant was found by Charles Boissevain and Carol Davidson at the foot of the cliffs bordering the west side of the Mesa Verde plateau near Cortez, Colorado, and described as a new species in their book "Colorado Cacti" published in 1940. It has also been collected near Shiprock, New Mexico and in Utah and Arizona in the Four Corners area, where the boundaries of all four states form a right-angled cross.



A small C. *mesae-verdae* in our Cactus House, 1¾ in. tall, 3 in. wide.

This pale gray-green depressed globose cactus is usually up to 2½ inches high and 3½ inches wide, having 13 to 17 spirally twisted ribs with oblong woolly areoles. Each areole has 8 to 10 short (⅜ in. long) appressed radial spines, cream colored and tipped with brown, some being inferior. Many of the areoles also bear a short, hooked, gray central spine that is tipped with black.

The inconspicuous fragrant flowers are funnelform, campanulate, 1¼ in. long and wide, and open only when the sun shines. The ovary is naked with a few small scales on the flower tube. Petals are purplish-brown with white margins. The throat of the flower is bright green and filaments are also green. The stout pistil is greenish-white; stigma lobes are green, short and erect; fruit is naked but crowned with the persistent perianth; seeds are shiny, black, kidney-shaped, 1/16 in. long.

This is a very early-flowering plant. It rarely grows for collectors who have nevertheless practically denuded areas where the plants used to be found in abundance. It is now on the rare plant list and is thus rightly not found in many collections.

Benson, in Cacti of Arizona, now lists the plant as Sclerocactus mesae-verdae.

Type locality: Cortez, Colorado.

Distribution: Southwest Colorado, southeast Utah, northwest New Mexico and northeast Arizona.

REFERENCE:

Boissevain & Davidson, Colorado Cacti

—WHE

ASPECTS OF THE DESERT

This is what springtime in the desert is supposed to look like, but we haven't had a spectacular spring like this since 1968, with Hedgehog Cactus and Brittlebush (shown here) and other flowers lavishly painting the desert. 1973, with a bit of luck, should outdo 1968.

Desert Trees and Shrubs

WHITE BUR-SAGE
Franseria dumosa A. Gray

Compositae
Sunflower Family

Franseria dumosa is a much-branched, bushy, perennial shrub up to one meter tall. It is compact and rounded, with spinescent stiff branches. The new stems are covered with short white hairs which are later shed, leaving exposed a white or grayish bark. Leaves are ashy-white, being densely covered with white hairs on both sides. The pinnate to bipinnate leaves are ovate with short, rounded or blunt lobes. Leaf segments are narrow and variable in shape. Overall leaf length is 1 to 2 cm and the width is 8 to 11 mm. Flowering can occur throughout the year. As this article is being written in mid-January, plants are already in flower, because of the wet fall and winter months. The flowers are unisexual, but the staminate and pistillate heads occur together on the same racemose or spiciform inflorescence. The minute yellow corollas are puberulent. Staminate heads are 3 to 4 mm in diameter, and the pistillate heads are two-flowered rather than three-flowered like those of **Franseria ambrosioides**. Fruit is subglobose, 4 to 6 mm long, and resembles a miniature cocklebur. It is puberulent with glandular hairs. In addition to two conic awl-shaped beaks, there are from 30 to 40 straight awl-shaped spines on the fruiting surface. These spines taper at the apex and have grooves on the upper surfaces. Seed is black, shiny and finely striate. Seeds measure 3 to 4 mm long and 1 to 1.5 mm broad. There is a beak at one end.

White Bur-Sage is one of the most abundant shrubs in desert basins and plains. It is found primarily in the Lower Sonoran Zone, from 150 to 910 meters in elevation (500 to 3000 ft). Occasionally it is found at elevations up to 1820 meters (6000 ft.). Often associated with **Larrea tridentata**, it grows on arid desert plains and alluvial desert slopes. It is also found on mesas and along the margins of shallow arroyos. Distribution extends from southern Nevada and Utah into Arizona and California, and southward into Sonora and Baja California, Mexico. In Arizona it ranges from Coconino and Mojave counties south and east into Maricopa,

This *F. dumosa* shrub is rather more open in habit than a typical shrub.

Bur-Sage branches, silhouetted to show small leaves, flower racemes.

The very small yellow flowers are covered with a fine white down.

Pinal, Pima, Santa Cruz, Graham and Yuma counties.

Franseria dumosa provides forage for horses and burros. Utilization studies indicate only light browsing by bighorn sheep and desert mule deer which animals range over much of the area where White Bur-Sage is found. While it has been used sparingly if at all as a landscape plant, it does grow as a wild plant on the grounds of the Desert Botanical Garden and it could well be utilized for a desert garden. Its rounded compact form with whitish, finely pinnate leaves would offer contrast to many other desert garden plants of more angular form and darker color. The bur-fruits are quite small and are not objectionable.

REFERENCES:

Benson & Darrow, The Trees and Shrubs of the Southwestern Deserts
Kearney & Peebles, Arizona Flora
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert

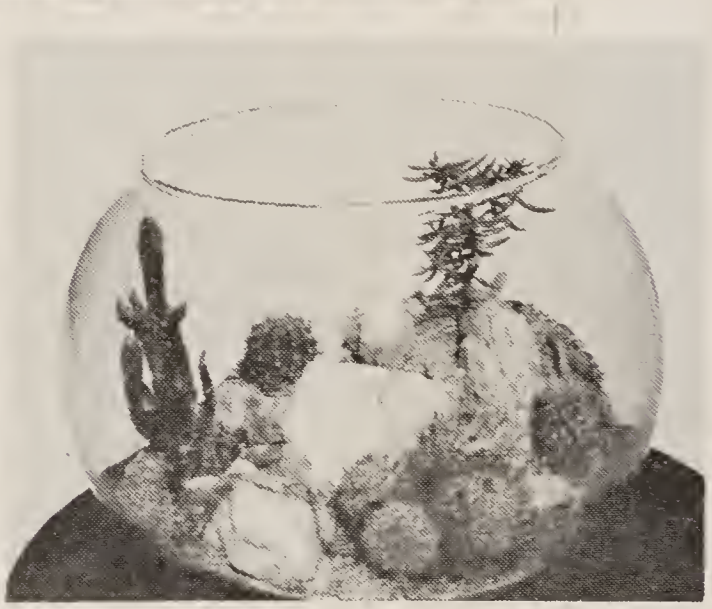
—JHW

FIELD TRIP

January 13. Lake Pleasant. Two small areas were explored before proceeding to the Picnic Area for lunch but in neither area was there an abundance of bloom. Some of the plants in flower were **Erodium cicutarium** (Heron-Bill or Filaree), **Amsinckia** species (Fiddle-Neck), **Franseria dumosa** (Bur-Sage), **Oenothera primiveris** (Evening Primrose), **Sphaeralcea** species (Desert Mallow), and **Plantago insularis** (Indian Wheat). The early leaves of **Dichelostemma pulchellum** (Blue-Dicks) were common but no flowering stalks were seen. After lunch the hillsides near the Picnic Area were explored and the most common blooms found there were **Draba cuneifolia**, a small white-flowered mustard and **Eucrypta micrantha** (Small-flowered Eucrypta). Returning to their cars the group continued on to a hillside north of the lake and then to an arroyo which was explored in its entirety. The hillside was the more spectacular of the two for it was dotted with **Eschscholtzia mexicana** (Mexican Poppy), and a **Gilia** species. Mrs. Elinor Lehto, Curator of the Herbarium at Arizona State University joined the group early in the foray and with her help few questions as to identity remained unanswered. Attendance was 22. Leader: Rodney Engard. Reporter: J. Harry Lehr.

CACTUS SHOW COMING!

Step right up! Come and be entertained, be educated! Admire and envy the prizewinners! Take pictures and collect ideas! The Greatest Cactus Show on Earth is coming to town February 18th-25th!



JOJOBA NEWS FROM 1972

From June 1 to June 3, 1972, the First International Jojoba Conference was held at the University of Arizona in Tucson. In addition to national Jojobaphiles from government and private sectors, there were representatives from Mexico, Israel, Australia, and several Southwest Indian tribes. One hundred five attendees were registered formally, but students and intermittent visitors swelled the number considerably beyond that figure. For a day and a half 21 speakers discussed the various aspects and problems connected with the research and development of Jojoba as a potential economic resource.

The afternoon of the second day was devoted to audience discussion with the leadership of Dr. W. G. McGinnies, chairman of the Conference, and Prof. D. M. Yermanos of the University of California at Riverside. Dr. Noel D. Vietmeyer of the National Academy of Science made a summing-up of the conference findings.

The third day of the conference was a field trip to wild Jojoba stands, terminating in a lunch period at the Boyce Thompson Southwest Arboretum near Superior. The suggestion to form a Task Group for Jojoba was approved by the conference and Dr. McGinnies of the Office of Arid Lands Studies (OALS), University of Arizona, was nominated chairman for the first year. Jojoba research and development is continuing under the leadership of OALS with the sponsorship of the Office of Economic Opportunity.

Dr. McGinnies assembled an ad hoc committee which met on November 28, 1972 to consider a 10-year plan for Jojoba, involving several million dollars. This plan, presented by Dr. Jack Johnson of OALS, outlined intermeshing programs in the areas of agriculture, industry and education. Funds and activities will continue to be directed toward the benefit of Indians.

A pilot mill for the extraction of Jojoba oil is to be erected on the Apache Reservation and will be operated by Apaches. They did an outstanding job in collecting almost 75,000 pounds of seed (uncleaned) last summer. The development of Jojoba candles and cosmetic use of the oil are two uses that appear most immediately applicable, since both these industries could afford the relatively high cost of wild seed harvest.

Several federal and philanthropic institutions will be involved in funding the Apache processing facility, Jojoba research, and scholarships for Indians. Some of the funds called for in the OALS Jojoba program will have to come from non-government services, and tribes will also be investing in the project.

Test and study plantings of Jojoba are being planned for several of the Indian reservations. The Agronomy Department at University of California at Riverside, under the direction of Prof. Yermanos, is planning extensive agronomic investigations. The Department is reported to have several tens of thousands of seedlings started. The Southwest Arboretum and the Desert Botanical Garden are starting varietal collection plantings which will supply germ plasm for further experiments.

The author has received communications from several individuals in Arizona and California who are planning to plant Jojoba. The Garden encourages such interest only if it is concerned with plant investigation. We do not recommend planting Jojoba at this stage if you expect to make money from it. The OALS at the U. of A. continues to be the focal point for sustained interest in the research and development of Jojoba. They are issuing a quarterly news sheet of Jojoba developments, called "Jojoba Happenings". Those desiring copies should apply to Dr. W. G. McGinnies, Office of Arid Land Studies, 1201 E. Speedway, Tucson, Arizona 85719.

While men are planning, Jojoba is waiting. It filled its cells and swelled its buds with the fall rains, but now it is chilled to the wood with our winter lows. The flowers I saw opening off-season in the fall were not pollinated and are now little empty bags with aborted ovules. Whether man plans it fast or slow, the season's greetings from Jojoba will come with the sunshine of spring.

—HSG

Editor's Notes

(Continued from page 15)

and Monuments, book dealers and cactus clubs. The balance is sold in our Bookstore.

Do you recall several of our members supplying plants to the Carlsbad (New Mexico) Zoological and Botanical State Park two years ago? Many people wondered if the plants could survive the cold winter at an elevation of 3000 ft. (compared to 1200 ft. here). You will be interested in how the plants fared. The more tender plants were moved into a large heated building and will remain indoors. The saguaros, organ pipes, senitas, etc. are still outside, but each is winterized by being individually wrapped in two-inch-thick fiber glass blankets. They survived last winter and should do likewise this winter. It's a startling sight to look up to a hilltop and see these tall cacti swathed in white blankets. Looks like a plant cemetery. Stop in and view these gardens when you visit Carlsbad Caverns or pass through on a trip eastward. You will enjoy the visit.

Spring Wildflower Reports: This looks like a great year for desert bloom. We're planning to fill the April issue with reports. Will you let us know what you find? Date, place and what you saw, please.

GARDEN ACTIVITIES

FEBRUARY

Thurs.	1st	LECTURE—Wildflowers of W. Australia	3:00 P.M.
Tues.	6th	CACTOMANIACS meeting	8:00 P.M.
Wed.	7th	CLASS—Cultivation of Trees & Shrubs	3:00 P.M.
Thurs.	8th	LECTURE—Desert Botanical Garden doings	3:00 P.M.
Sat.	10th	FIELD TRIP—Estrella Mountains	8:30 A.M.
Wed.	14th	CLASS DESERT TRIP—Usery Mountain	8:30 A.M.
Wed.	14th	ART ENTRIES DUE FOR CACTUS SHOW	before 5:00 P.M.
Sat.	17th	ALL OTHER ENTRIES DUE FOR CACTUS SHOW	before 1:00 P.M.
Sun. thru Sun.	18th 25th	26th ANNUAL CACTUS SHOW	daily 9-5 P.M.
Tues.	27th	BONSAI SOCIETY meeting	7:30 P.M.

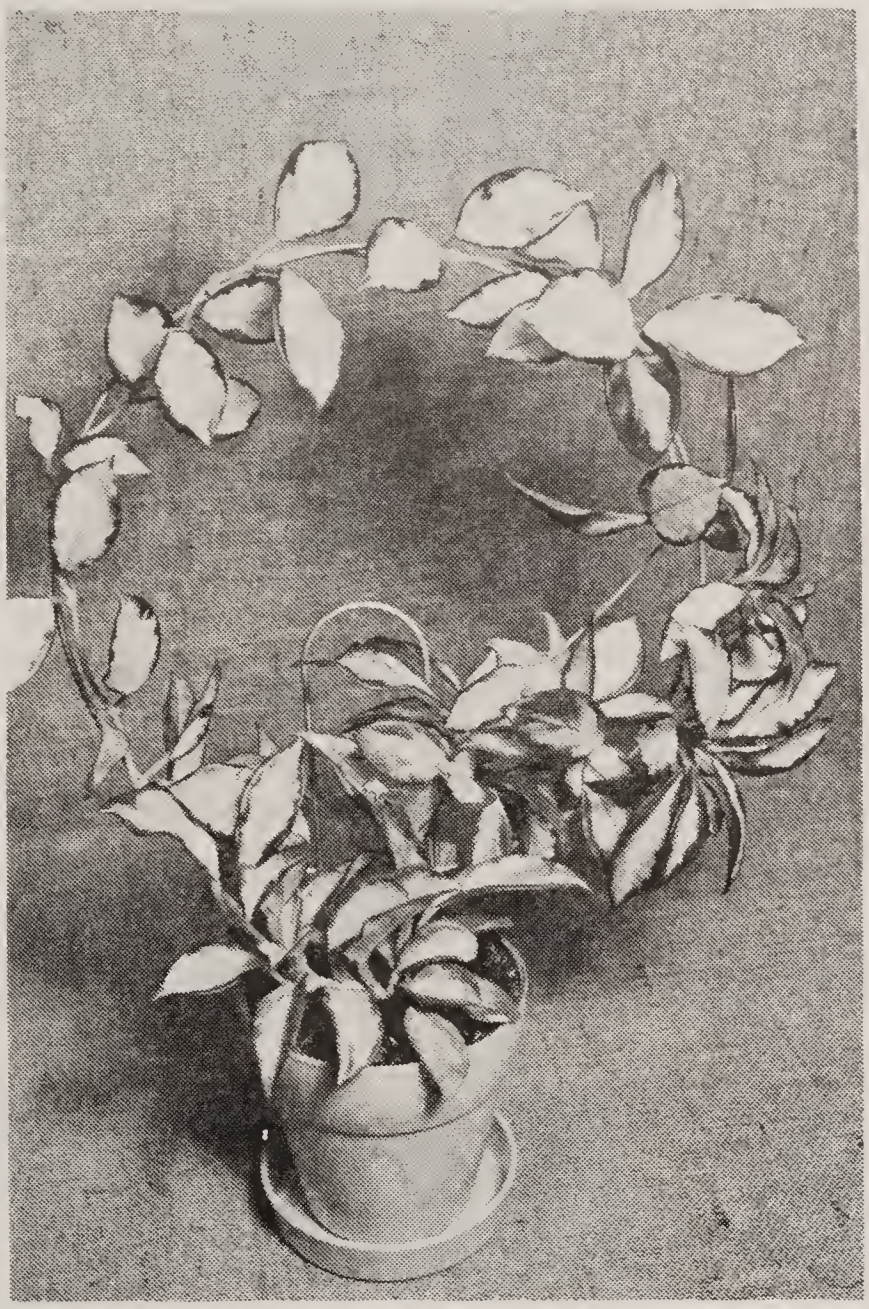
MARCH

Thurs.	1st	LECTURE—Arizona Cacti in Flower	3:00 P.M.
Tues.	6th	CACTOMANIACS meeting	8:00 P.M.
Wed.	7th	CLASS—Desert Plants	3:00 P.M.
Thurs.	8th	LECTURE—Arizona Wildflowers	3:00 P.M.
Sat.	10th	FIELD TRIP—Peralta Canyon	8:30 A.M.
Wed.	14th	CLASS—Succulent Plants	3:00 P.M.
Thurs.	15th	LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Wed.	21st	CLASS—Cultivation of Succulent Plants	3:00 P.M.
Thurs.	22nd	LECTURE—Arizona Birds, etc.	3:00 P.M.
Tues.	27th	BONSAI SOCIETY meeting	7:30 P.M.
Wed.	28th	CLASS—Desert Trees & Shrubs	3:00 P.M.
Thurs.	29th	LECTURE—Arizona Scenics	3:00 P.M.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVII MARCH, 1973 No. 3



REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Vol. XXVII MARCH, 1973 No. 3

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Desert Botanical Garden of Arizona

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REPORT OF THE TWENTY-SIXTH ANNUAL CACTUS SHOW

The 26th Annual Cactus Show held in the Webster Auditorium February 18th through 25th was another excellent display of exhibits. Always an exciting show, this year's had its own high points in the quality of the cacti and leaf succulent plants exhibited. Mention must also be made of the high caliber of dried arrangements, the paintings, drawings and photographs, the lovely desert woods and the miniature desert roots that were heroic sculpture in microcosm.

The Flower Preservers, that newly formed group, made a fine addition to the show with their exhibits of dried flowers displayed in decorative ways, and they caused many show visitors to sign up for the Flower Preserving Course starting on March 14th. (Details of the course were included with your February Saguaroland Bulletin.)

More than 650 individual exhibits were entered in the Cactus Show by 116 exhibitors from Phoenix, Scottsdale, Sun City, Salome, Apache Junction, Chandler, Tucson, Sierra Vista and Payson (to mention just a few), and all helped to make this 26th Annual Show an outstanding one. On opening day, Sunday, February 18th, about 3,000 enthusiastic visitors were clocked through our gates. Attendance continued high during the rest of the show despite rain, intermittent showers, swollen rivers and impending floods.

Our co-sponsor, the Phoenix Gazette, again gave us excellent publicity, as did newspapers in surrounding cities. Announcements of the show appeared in many national magazines and in out-of-state newspapers. The Garden appreciated all this publicity which helped swell attendance at the show and attracted visitors to the Garden.

It is again my pleasant duty to thank our volunteers who were more than usually important in helping produce a successful and congenial show. They each gave us one-half day to four days of work during these busy eight days.

Buffet lunches were all the "pay" our workers had. Thelma McDougall was in charge all week long and her "fellow-feeders" were Virginia Fraser, Betty Schrieber, Lela Turner, Marie Gentry, Helen Mitchell.

Barbara Worbington, who "retired" as the Garden's secretary last fall, was back as

During the Show, plants donated by Garden Members are sold to visitors who, perhaps, will become exhibitors in future Shows.

a volunteer and worked just as hard as ever for a full week before the Show to register Show entries, and for the eight days of the Show clocking attendance, making sales, and answering questions in the Visitors' Building.

Lela Turner also gave a full week of time before the Show, during it, and after it. Such loyalty (of these and the volunteers named below) is truly appreciated by the Garden's Staff.

Member-Exhibitors who volunteered were: Frederick C. Baselt, Mr. and Mrs. Arthur Holt, Margaret Jenkins, Mr. and Mrs. Charles Mieg, Mr. and Mrs. A. Paul Neumann, Genevieve Oppen, Mr. and Mrs. Ed. Schrieber, Eudora Stiles, Mrs. R. J. Turner, Mrs. James Waltz, Evelyn Willcutt.

Other volunteer members were: Margaret Caldwell, Martha Chester, Mr. and Mrs. Weston Cook, Lillian Diven, Elmer Elcock, Genevieve Evans, Sylvia Fink, Muriel Freeman, Helen Friedrichs, Ruth Garland, Florentine Gebert, Peg Gill, Mr. and Mrs. Lloyd Graham, Mr. and Mrs. Carl Groschke, Dorothy Gunderson, Mr. and Mrs. Frank Hennessey, Mildred Hunt, Bert Jinneman, Roberta Jordan, Parvis Khalili, Marie Lockhart, Georgia McCaa, Mr. and Mrs. J. C. McDougall, Mrs. L. M. Nelson, Angie Nicosia, Laura Nixon, Mrs. James Pappas, Mr. and Mrs. Wendell Phillips, Dorothy Rieff, Rosebud Rudolph, Reta Saunders, B. Schillerstrom, Joy Lee Schroeder, Helen Seder, Mrs. Bruce Smith, Mrs. B. W. Upchurch, Demetrios Vlachos.

26th ANNUAL CACTUS SHOW

AWARD WINNERS

SWEEPSTAKES AWARDS

(Accumulation of the most award points in the specific group)
CACTI: Alan Blackburn, 5160 W. Sweetwater Drive, Tucson.
LEAF SUCCULENTS: James Robbins, Box 1, Sierra Vista, Ariz.
ARRANGEMENTS: Mrs. Ted Chambers, 10540 E. Apache Trail, Apache Jct.
ARTS: Barbara Hovatter, Salome, Ariz.

TROPHY WINNERS

CACTUS: L. Bremer, 11220 105th Ave., Sun City, Ariz.
MAMMILLARIA: Alan Blackburn.
DISH GARDEN: Alan Blackburn.
PATIO PLANTER: Alan Blackburn.
COLLECTION OF 5 CACTI: Robert Moulis, 13431 N. 33rd Place, Phoenix.
LEAF SUCCULENT: Henry C. Triesler, Jr., 324 E. Sheridan St., Phoenix.
ALOE: James Robbins.
BROMELIAD: Henry C. Triesler, Jr.
COLLECTION OF 5 LEAF SUCCULENTS: James Robbins.
CRESTED CACTUS: L. Bremer.
CENTERPIECE: Mrs. Ted Chambers.
ARRANGEMENT AGAINST WALL: Mrs. Ted Chambers.
BUTTON ARRANGEMENT: Mrs. Ted Chambers.
DESERT WOOD: Barbara Hovatter.
PHOTO, PRINT: Walter Grolle, Sr., 4521 W. Orangewood Ave., Glendale.
PHOTO, TRANSPARENCY: Laurie Kriz, Route 1, Box 1705, Apache Jct.

OIL PAINTING: Bernardine Bowen, 2730 N. Myrtle, Tempe.
WATERCOLOR: Ruth Blomeyer, 5716 E. Cactus Wren Rd., Scottsdale.
ANY OTHER MEDIA: Dorothy Seideman, 4155 E. Beryl Lane, Phoenix.
JUNIOR SCHOOL EXHIBIT: Shaw Butte School, Grade 3, Room 16, Phoenix.
JUNIOR EXHIBIT (INDIVIDUAL): Dennis Harrison, 5344 E. Flower, Phoenix.
DRIED FLOWER EXHIBIT: Joan Smith, 715 E. Osborn, Phoenix.

RIBBON AWARD WINNERS

SECTION I, CACTI. CLASS A, POTTED PLANTS

1. OPUNTIA. 1st and 3rd, Emma Oscarson. 2nd, Alan Blackburn.
2. CEREUS. 1st, Alan Blackburn. 2nd, Al Bellerue. 3rd, Emma Oscarson.
3. ECHINOCEREUS. 1st and 3rd, Alan Blackburn. 2nd, R. Moulis.
4. REBUTIA. 1st and 2nd, Alan Blackburn. 3rd, Charles Mieg.
5. CHAMAECEREUS. 1st, Fran Tolleson. 2nd, Alan Blackburn. 3rd, Mrs. Richard Enz.
6. LOBIVIA. 1st, 2nd and 3rd, Alan Blackburn.
7. ECHINOPSIS. 1st and 2nd, Alan Blackburn. 3rd, Barbara Worbington.
8. ARIOCARPUS. 1st and 2nd, Alan Blackburn. 3rd, Fran Tolleson.
9. STENOCACTUS. 1st, L. Bremer. 2nd and 3rd, Alan Blackburn.
10. FEROCACTUS. 1st and 2nd, Alan Blackburn. 3rd, L. Bremer.
11. ECHINOCACTUS. 1st, L. Bremer. 2nd, Henry Triesler. 3rd, Paul Neumann.
12. GYMNOCALYCIUM. 1st, 2nd, 3rd, Alan Blackburn.

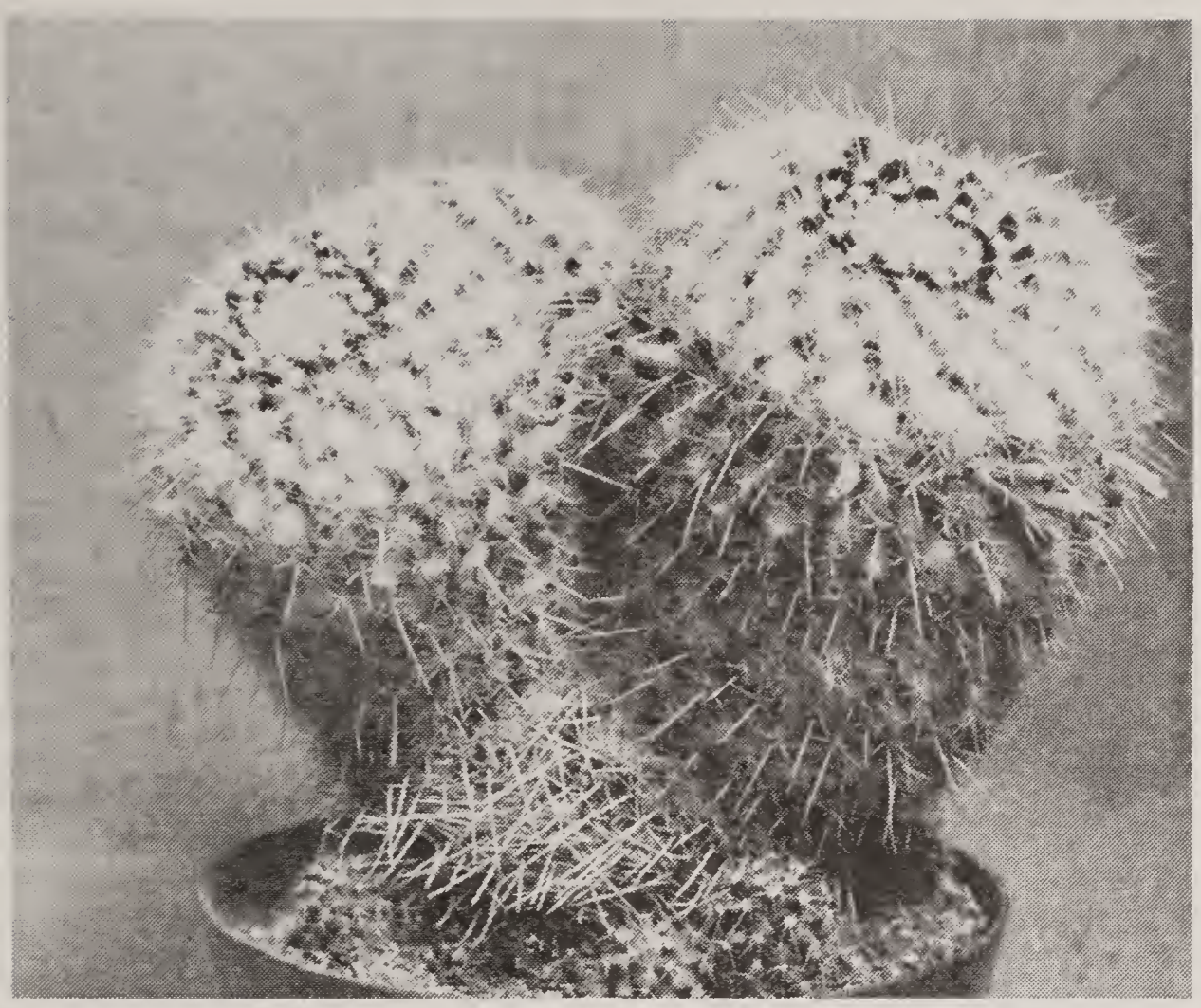
A superb *Bromeliad nicaraguensis* entered by Henry C. Triesler, Jr. was awarded a trophy for being the best bromeliad in the Show.

At left, Betty Schrieber's strikingly balanced dried arrangement. At right, Fran Tolleson's dish garden of two downy-leaved succulents.

13. ASTROPHYTUM. 1st, 2nd, 3rd, Alan Blackburn.
14. THELOCACTUS. 1st, Alan Blackburn. 2nd and 3rd, R. Moulis.
15. ECHINOMASTUS. 1st, L. Bremer. 2nd and 3rd, R. Moulis.
16. CORYPHANTHA. 1st, L. Bremer. 2nd and 3rd, Alan Blackburn.
17-A. MAMMILLARIA. 1st, Alan Blackburn. 2nd, Emma Oscarson. 3rd, R. Moulis.
17-B. MAMMILLARIA (MILKY SAP). 1st, 2nd and 3rd, L. Bremer.
17-C. MAMMILLARIA (HOOKED-SPINE) 1st, L. Bremer. 2nd, Fran Tolleson.
18. NOTOCACTUS. 1st and 2nd, Alan Blackburn. 3rd, Genevieve Oppen.
19. NEOPORTERIA. 1st, 2nd and 3rd, Alan Blackburn.
20. PARODIA. 1st and 2nd, Charles Mieg. 3rd, Alan Blackburn.
21. SEEDLINGS. 2nd, Charles Mieg.
22. TURBINOCARPUS. 1st and 2nd, R. Moulis. 3rd, Alan Blackburn.
23. PEDIOCACTUS. 1st and 2nd, Alan Blackburn.
24. ANY OTHER SPECIES: 1st, Emma Oscarson. 2nd, Alan Blackburn. 3rd, R. Moulis.
25. DOLICHOTHELE. 1st, Alan Blackburn.
26. COCHEMIA. 1st and 2nd, Alan Blackburn.
27. MILA. 1st, Alan Blackburn.
28. COPIAPOA. 1st and 2nd, Alan Blackburn.
29. ISLAYA. 1st, Alan Blackburn.
30. WEINGARTIA. 1st, Alan Blackburn.
31. MELOCACTUS. 1st, Paul Neumann. 2nd and 3rd, Alan Blackburn.
32. MALACOCARPUS. 1st, 2nd and 3rd, Alan Blackburn.
33. HAAGEOCEREUS. 1st and 2nd, Alan Blackburn.
34. LEUCHTENBERGIA. 1st, Fran Tolleson.
35. PELECYPHORA. 1st, Emma Oscarson.

SECTION I, CACTI. CLASS B, CRESTED
1. OWN ROOT. 1st and 2nd, L. Bremer. 3rd, R. Moulis.
2. GRAFTED. 1st, R. Moulis.

CLASS C, MONSTROSE. 1st, Alan Blackburn. 2nd, Genevieve Evans. 3rd, Fran Tolleson.



Alan Blackburn's *Mammillaria nejapensis*, judged the best Mammillaria of the many entered in the Show.

CLASS D, GRAFTED. 1st and 2nd, R. Moulis. 3rd, Fran Tolleson.
CLASS E, COLLECTIONS. 1st, R. Moulis. 2nd, Genevieve Oppen.

SECTION II, SUCCULENTS OTHER THAN CACTI. CLASS A, POTTED PLANTS

1. AEONIUM. 1st and 2nd, Alan Blackburn.
2. AGAVE. 1st and 3rd, Henry Triesler.
3. ALOE. 1st, James Robbins. 2nd, Henry Triesler. 3rd, Alan Blackburn.
4. BRYOPHYLLUM. (None)
5. CRASSULA. 1st, Henry Triesler. 2nd and 3rd, James Robbins.
6. DUDLEYA. 1st, Mrs. J. J. Belford. 2nd and 3rd, Henry Triesler.
7. ECHEVERIA. 1st, Fran Tolleson. 2nd, L. B. Earle. 3rd, James Robbins.
8. EUPHORBIA. 1st, Genevieve Oppen. 2nd, James Robbins. 3rd, Fran Tolleson.
9. GASTERIA. 1st, Henry Triesler. 2nd, James Robbins.
10. HAWORTHIA. 1st and 2nd, James Robbins. 3rd, R. Moulis.
11. KALANCHOE. 1st, Alan Blackburn. 2nd, Fran Tolleson. 3rd, Lela Turner.
12. LITHOPS. 1st, C. L. Hanson. 2nd and 3rd, James Robbins.
13. MESEMBRYANTHEMUM. 1st, Dottie Battiest.
14. PLEIOSPILOS. 1st and 2nd, Fran Tolleson. 3rd, James Robbins.
15. SEDUM. 1st, Fran Tolleson.
16. STAPELIA. (None).
17. YUCCA. (None).
18. BROMELIADS. 1st, Henry Triesler.
19. SEEDLINGS. 1st, James Robbins.
20. HOYA. 1st, Mrs. Sam Schlosser.

Left: Lela Turner's arrangement of dried material. Right: Roots, Ironwood knots, galls, 20 tiny displays in a 6x8 ¾ box. (B. Hovatter.)

21. ANY OTHER SPECIES. 1st, 2nd, 3rd, C. L. Hanson.
22. ADROMISCHUS. 1st, 2nd, 3rd, Fran Tolleson.
23. CONOPHYTUM. 1st and 3rd, James Robbins. 2nd, C. L. Hanson.
24. MONOTYPIC GENUS (Herreanthus meyeri). 1st, James Robbins.
25. MONOTYPIC GENUS (Lapidaria margaretae) 1st, James Robbins.
26. ANACAMPSEROS. 1st, 2nd, 3rd, James Robbins.
27. COTYLEDON. 1st and 2nd, James Robbins.
28. DINTERANTHUS. 1st, 2nd, 3rd, James Robbins.
29. GLOTTOPHYLLUM. 1st, James Robbins.
30. FAUCARIA. 1st, James Robbins.
31. OTHONNA. 1st, James Robbins.
32. OPHTHALMOPHYLLUM. 1st, 2nd, 3rd, James Robbins.
33. CHEIRIDOPSIS. 1st, 2nd, 3rd, James Robbins.

CLASS B, COLLECTIONS. 1st, James Robbins, 2nd and 3rd, Henry Triesler.

SECTION III. DESERT TREES AND SHRUBS

CLASS A, TREES. 1st and 2nd, Henry Triesler.

CLASS B, SHRUBS. 1st and 2nd, R. E. Gary.

CLASS C, DESERT BONSAI. 1st, Fran Tolleson. 2nd, C. L. Hanson.

CLASS D, SEEDLINGS. 1st, Charles Mieg.

CLASS E, ANY OTHER DESERT PLANTS. 1st, James Robbins. 2nd, Mrs. William Rutschman.

Agave mescal, was judged the best leaf succulent in the Show.

Agave parryi is equally photogenic. Both entered by H. Triesler.

SECTION IV, ARRANGEMENTS
CLASS A, DISH GARDENS

1. CACTI. 1st, Emma Oscarson. 2nd, Al Bellerue. 3rd, Betty Schrieber. 4th, Lillian Lugibihl.
2. OTHER SUCCULENTS. 1st, Lela Turner. 2nd, Bonnie Rodriguez. 3rd, Betty Schrieber. 4th, Fran Tolleson.
3. CACTI & OTHER SUCCULENTS. 1st, Alan Blackburn. 2nd, Jacqueline Evans. 3rd, Lela Turner. 4th, Fran Tolleson.

CLASS B, TERRARIUM. 1st, Ruby B. Jennings. 3rd, William Doherty.
CLASS C, CENTERPIECES.

1. CACTI. 1st, Lela Turner. 2nd, Dottie Battiest.
2. OTHER SUCCULENTS. 1st, Rena Norvel. 3rd, Lela Turner.
3. CACTI & OTHER SUCCULENTS. 1st, Lela Turner. 2nd, Emma Oscarson.
4. NATURAL, DRIED DESERT MATERIAL. 1st, Lela Turner. 2nd, Lillian Lugibihl. 3rd, Hazel Capp.
5. MEXICAN THEME. 1st, Jacqueline Evans.
6. AMERICAN INDIAN THEME. 1st, Mrs. Ted Chambers.

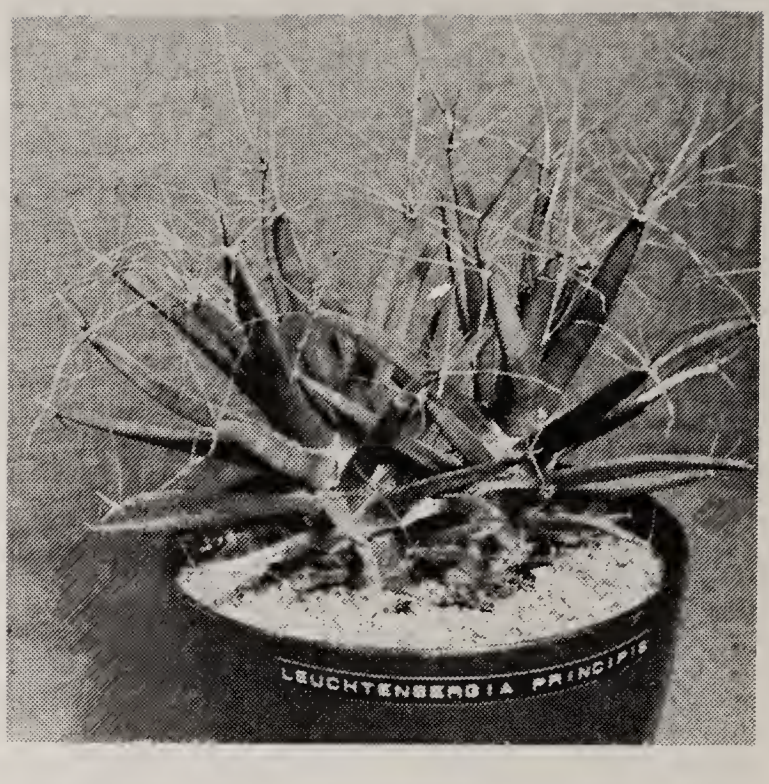
CLASS D, ARRANGEMENTS ON OR AGAINST WALL

1. CACTI. 1st, Lela Turner. 2nd, Dottie Battiest. 3rd, Mrs. Ted Chambers.
2. OTHER SUCCULENTS. 2nd, Lela Turner. 3rd, Betty Blackburn.
3. CACTI & OTHER SUCCULENTS. 1st, Lela Turner. 3rd, Dottie Battiest.
4. NATURAL, DRIED DESERT MATERIAL. 1st, Hazel Capp. 2nd, Mrs. Ted Chambers. 3rd, Lela Turner. 4th, Emma Oscarson.
5. MEXICAN THEME. 2nd, Mary Henager.
6. AMERICAN INDIAN THEME. 1st, Mrs. Ted Chambers. 2nd, Betty Schrieber. 3rd, Mrs. William Rutschman.
7. ANY OTHER. 1st, Margaret Jenkins. 2nd, Betty Schrieber. 3rd, Douglas J. Johnson.

CLASS E, CORSAGES. Mrs. Ted Chambers, three 1sts.
CLASS F, BUTTON ARRANGEMENTS.

1. CACTI. 1st, Bonnie Rodriguez. 2nd, Mrs. Ted Chambers.

Dried arrangements by Mrs. Ted Chambers.



Leuchtenbergia principis, one of Fran Tolleson's winners, is called "Agave Cactus."

2. OTHER SUCCULENTS. 2nd, Bonnie Rodriguez. 3rd, Hazel Capp.
3. CACTI & OTHER SUCCULENTS. 1st, Bonnie Rodriguez.
4. NATURAL, DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Bonnie Rodriguez. 3rd, Ruby B. Jennings.
5. MEXICAN THEME. 1st, Mrs. Ted Chambers. 3rd, Bonnie Rodriguez.
6. AMERICAN INDIAN THEME. 1st, Mrs. Ted Chambers. 3rd, Bonnie Rodriguez.
7. ANY OTHER. 1st, Betty Schrieber. 2nd, Mrs. Ted Chambers. 3rd, Bonnie Rodriguez.

CLASS G, MINIATURE, under 5 inches high.

1. CACTI. 1st, Mrs. Ted Chambers. 3rd, Barbara Hovatter.
2. OTHER SUCCULENTS. 1st, Hazel Capp.
3. CACTI & OTHER SUCCULENTS. 1st, Gladys McCreary.
4. NATURAL, DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 3rd, Barbara Hovatter.
5. MEXICAN THEME. 3rd, Betty Schrieber.
6. AMERICAN INDIAN THEME. (None).
7. ANY OTHER. 1st, Mrs. Ted Chambers. 2nd, Betty Schrieber.

CLASS H, SMALL, 5 in. to 8 in. high.

1. CACTI. (None).
2. OTHER SUCCULENTS. 1st, Fran Tolleson. 3rd, Betty Blackburn.
3. CACTI & OTHER SUCCULENTS. (None).
4. NATURAL, DRIED DESERT MATERIAL. 1st, Mrs. Ted Chambers. 2nd, Betty Schrieber. 3rd, Barbara Hovatter.
5. MEXICAN THEME (None).
6. AMERICAN INDIAN THEME. 2nd, Mrs. Ted Chambers.
7. ANY OTHER. 1st, Mrs. Ted Chambers.

Commercial exhibits at the Show, like this one, introduce visitors to plants and landscaping ideas.

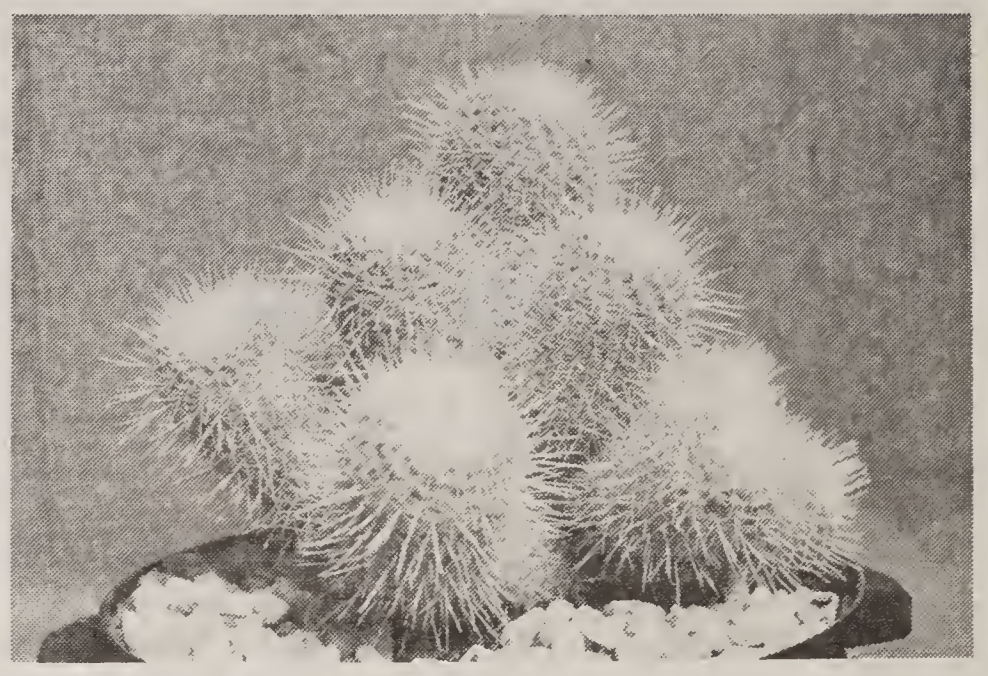
CLASS J, HANGING BASKETS. 1st, Alan Blackburn. 2nd, Mary Nelson. 3rd, L. B. Earle. 4th, Judy Smith.
CLASS K, STRAWBERRY JARS. 1st, Fran Tolleson. 3rd, Dottie Battiest.
CLASS L, PATIO PLANTERS. 1st, Alan Blackburn. 2nd, James Robbins. 3rd, Dottie Battiest. 4th, Henry Triesler.

SECTION V, CLASS A, BLACK & WHITE PHOTOGRAPHY.
FLORA. 1st, Jack Hallen. 2nd & 3rd, Agnes M. Holst.
FAUNA. 1st, John H. Walter.
LANDSCAPES. 1st and 3rd, Hobart Pribbenow. 2nd, Bill Woodward.
CLASS B, COLOR PHOTOS (TRANSPARENCIES).
FLORA. 1st, Mrs. R. M. Shervem. 2nd, Eva M. Latham. 3rd, Alois Maag.
FAUNA. 1st, 2nd, 3rd, Laurie Kriz.
LANDSCAPES. 1st, Walter J. Groll, Sr. 2nd, Eva M. Latham. 3rd, Mrs. R. M. Shervem.
CLASS B, COLOR PHOTOS (PRINTS) 1st and 2nd, Walter J. Groll, Sr. 3rd, Dorothy Deideman.
CLASS C, OIL PAINTINGS.
FLOWERS: 1st, Valerie Stumpf. 2nd, Art Hays. 3rd, Ruth McNeill. 4th, Ruby B. Jennings.
LANDSCAPES: 1st, Bernadine Bowen. 2nd, Zoraida Twitty. 3rd, Max Wollenman. 4th, Louise Dawson. 4th, Art Hays.
CLASS D, WATERCOLORS.
FLOWERS: 1st, Ruth Blomeyer. 2nd, Doris Griswold. 3rd, B. L. Ogron.
LANDSCAPES: 1st, Ruth Blomeyer. 2nd, Isabelle Holt. 3rd, Kenneth C. Balcomb. 4th, Barbara Hovatter. 4th, June Halquist.
CLASS D, DRAWINGS. 1st and 2nd, Barbara Hovatter. 3rd, Louise Dawson. 4th, Mrs. Robert Troutman.
CLASS F, CRAFTS. 1st, Dorothy Seideman. 2nd, Elaine Weisman. 3rd, Barbara Hovatter. 4th, Carl L. Wiehe. 1st and 2nd ceramic sculpture, Judy F. Smith. 4th, Agnes M. Holst.

CLASS G, NATURAL DESERT WOODS. 1st and 4th, Barbara Hovatter. 2nd, L. B. Earle. 3rd, Lela Turner.

SECTION VII, JUNIOR CLASS

Grade 3 of Shaw Butte School. Painting, Gregory Beroza. Karen Eastin, cactus and art. Kathy Deford, dish garden. Stacy Eastin, cacti. Heidi Dunn, cactus. Dirk Scotka, wood. George Bria, wood and art. Dennis Harrison, dish garden. Robby Scott, button arrangements, cacti, wood.



White-spined Mammillarias are always eye-catching. This *Mammillaria geminispina* entered in the Show by Emma Oscarson is an attractive plant.

GARDEN ACTIVITIES

MARCH

Thurs.	1st	LECTURE—Arizona Cacti in Flower	3:00 P.M.
Tues.	6th	CACTOMANIACS meeting	8:00 P.M.
Wed.	7th	CLASS—Desert Plants	3:00 P.M.
Thurs.	8th	LECTURE—Arizona Wildflowers	3:00 P.M.
Sat.	10th	FIELD TRIP—Peralta Canyon	8:30 A.M.
Wed.	14th	CLASS—Succulent Plants	3:00 P.M.
Thurs.	15th	LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Wed.	21st	CLASS—Cultivation of Succulent Plants	3:00 P.M.
Thurs.	22nd	LECTURE—Arizona Birds, etc.	3:00 P.M.
Tues.	27th	BONSAI SOCIETY meeting	7:30 P.M.
Wed.	28th	CLASS—Desert Trees & Shrubs	3:00 P.M.
Thurs.	29th	LECTURE—Arizona Scenics	3:00 P.M.

APRIL

Tues.	3rd	CACTOMANIACS meeting	8:00 P.M.
Wed.	4th	CLASS—Cultivation of Trees & Shrubs	3:00 P.M.
Thurs.	5th	LECTURE—Cacti of Mexico	3:00 P.M.
Wed.	11th	CLASS DESERT TRIP—Rackinsack Canyon	8:30 A.M.
Thurs.	12th	LECTURE—Wildflowers of W. Australia	3:00 P.M.
Sat.	14th	FIELD TRIP—Cline Ranch	8:30 A.M.
Thurs.	19th	LECTURE—Desert Botanical Garden doings	3:00 P.M.
Tues.	24th	BONSAI SOCIETY meeting	7:30 P.M.
Thurs.	26th	LECTURE—Arizona Cacti	3:00 P.M.
Sat. & Sun. 28th &	29th	BONSAI SHOW & DEMONSTRATIONS	9:00-5:00 P.M.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVII April, 1973 No. 4

REG MANNING '57

SAGUAROLAND BULLETIN

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W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Vol. XXVII | April, 1973 | No. 4

Arizona Cactus and Native Flora Society

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Cover: The parasitic *Orobanche* (see p. 40)

Desert Botanical Garden of Arizona

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Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

Enclosed is a ballot on a returnable postcard which I wish you'd check. Incumbent Board Members are up for reelection for the next three years. You will also find space for "write-in" candidates. Be sure you mail your ballot so that it reaches the Garden by May 5th. The date of the Annual Members' Meeting is Sunday, May 6th, and the meeting will be held here at three o'clock in the Richter Memorial Library. We urge all our members to attend the meeting and hear the reports on the past year's progress and on our plans for 1973-74.

Japan has its Year of the Rat. Well, northern Arizona has had its Year of the Big Snows, southern Arizona has had its Year of the Big Weeds, and Arizona's desert has (still) its Year of the Big Blooming.

Needless to say, with the continuous rains since last October, and the long period of cool weather, something had to happen in our desert this year. What happened was the biggest splash of wildflower color since at least 1965. All this color is now on display throughout the low desert and merging into the transitional desert of scrub, manzanita and oak.

We have been besieged with letters and phone calls from all over the country asking when and where to see the best desert color. Through most of April we can be sure of wildflowers in the following areas, and in late April you will still find wildflowers in bloom at slightly higher locations.

Short trips: Phoenix' South Mountain Park; north on Scottsdale Road to Pinnacle Peak Road, and up over Reata Pass to the east-facing slope of the hill, then down to the Verde River, through the Fort McDowell Reservation, and southwest back to Phoenix; Bee Line Highway to Saguaro Lake and back by the old Bush Highway and thence south to Apache Blvd. and turn west for home.

All day trips: Roosevelt Lake via the Apache Trail, Tonto Cliff Dwellings, then east to Miami where you turn west onto Route 60 toward home; to Tucson via Florence Junction and Oracle, then back on Interstate 10 past poppy-covered Picacho Peak on your way home; to Gila Bend and then south to Organ Pipe National pmonument where the Ajo Mountain Drive is highly recommended; or Gila Bend to Yuma and then north to Quartzsite and Parker; Wickenburg and the Vulture Mine are excellent, as is a trip through Wickenburg north on Route 93 where the Joshua Trees are in bloom.

On these trips you will see large numbers of desert verbena, evening primrose, blue-dicks, brittle bush (still), purple mat, lupines, owl-clover, pin-cushion flower, desert heliotrope, chicory, desert mallow, pentstemon, desert lilies (they bloom about once in seven years), yucca, fairy duster, rock daisy, bead-pod, spectacle-pod, sand verbena, prickly poppy, and desert marigold.

This is perhaps the best year we've ever had, and many people are stocking up on photographs they can look at during the

(Continued on page 47)

Arizona Wildflower

BROOM-RAPE
Orobanche ludoviciana
Orobanchaceae
Broom-Rape Family

This plant is a root parasite with no chlorophyll of its own, taking all its food from the roots of the plant near which it is found. In the case of **Orobanche ludoviciana** the host plants are **Franseria** (Bur-sage) and other members of the Composite Family. One variety of the species, however, found near Flagstaff, was parasitic on two cacti, **Opuntia** and **Echinocactus.**

Broom-rape is not a common desert plant, but its oddity attracts attention wherever it is found in the Lower Sonoran Zone. The fleshy stems, with leaves reduced to scales, somewhat resemble coarse shoots of asparagus, but what a strange asparagus! The plant photographed at the Garden and shown here is a nearly-black blackish-purple velvety thing. Since it has no chlorophyll, there is not even a touch of green in the blackness. Plants of the same species are also found with stems and scales of brown, yellowish-brown and brown-purple.

O. ludoviciana is from four to fifteen inches tall. It is found in open, sandy desert areas and blooms from March to July. The stems are fleshy, and the alternate leaves are reduced to scales.

The flower head, which occupies almost the whole height of the plant, is made more striking by the absence of foliage. The flowers are densely crowded on the head, and are tubes three quarters of an inch long and one-quarter inch across, with the lower lip three-lobed. The tube is white with a slight hint of lavender, and the lobes are rich dark purple.

In Arizona, **O. ludoviciana** occurs from Navajo, Coconino and Mohave counties south to Santa Cruz, Pima and Yuma counties at elevations between 200 and 7000 ft. Elsewhere it is found from western Texas to southern Utah and Nevada, southeast California and northwest Mexico.

REFERENCES

Dodge, Flowers of the Southwest Deserts
Kearney & Peebles, Arizona Flora.

——LD

Flowers of the Broom-rape are covered with fine hairs. Side view, above, front view below.

Mexican Cactus

BISHOP'S MITRE
Astrophytum myriostigma
Cactaceae

This most attractive of the Star Cacti (**Astrophytum** spp.) excites interest when it is seen for the first time. Its firm surface, that looks and feels as if it were sprinkled with salt, is quite different from most other cacti and from its spiny relatives in the genus Astrophytum, yet another species, **A. nudus** is much smoother, with a green body. That species, however, is a much rarer plant and seldom seen in collections.

A. myriostigma is a very easy plant to grow and can be found at most nurseries that carry a line of cactus. It requires a leaf-mold type of soil, and should be watered weekly during the summer, monthly during the winter, if it is kept indoors. It flowers when it is about three inches high, with a bright yellow flower at its apex — which gives the "bishop's mitre" a jaunty, non-ecclesiastical look.

This cactus grows to eight inches high and four inches wide. Plants usually have five ribs, but there are also plants that have only four ribs, or have additional ribs totalling eight or ten. Some European botanists feel that these additional ribs warrant a varietal name, so you may find listed **A. myriostigma** var. **quadrangularis** (4 ribs), var. **octagonalis** (8 ribs), and **columnaris** (tall with many ribs), as well as other varieties.

A. myriostigma has no spines on the body, and wool, but no spines, in the apex.

This *A. myriostigma,* collected for the Garden, is about six inches tall.

From the top, the reason for the name "Bishop's Mitre" is apparent.

The flowers are light to dark yellow, one to two inches in diameter and one and a half to two inches long. The fruit has bristles. When it is ripe the dried perianth rolls back on the upper basal pore, revealing the brown seeds shaped like a tight crescent. The seeds are relished by birds, rodents, ants, and nurserymen. The last of these know what a popular small cactus the "bishop's mitre" is.

A. myriostigma grows among broken limestone rocks, and because of its gray-green color, spinelessness and rounded shape is hard to spot. It is found in the high plateau country of central Mexico in the states of Coahuila and San Luis Potosi. The plant photographed here was found southeast of Villa Juarez, San Luis Potosi.

Type locality: (not cited).

Distribution: north central Mexico.

REFERENCES

Bravo, H. Las Cactaceas de Mexico
Britton & Rose, Cactaceae

——WHE

WILDFLOWER REPORTS

In this spring of the best wildflower displays we can remember, several things happened that we didn't expect. The desert poppies were expectedly profuse, but in most places (except on rocky mountain sides) you saw, not sheets of glowing orange but a green background heavily sprinkled with orange. The same applied to lupines and owl clover. The reason for this was the superabundance of Filaree, or Heronbill, (Erodium spp.). It grew so thick and so high (to eighteen inches instead of three to eight inches) that it literally overshadowed the thick stands of other plants. Poppies, dealing with the competition as they could, were found sometimes two feet tall, an extraordinary size. Other wildflowers grew and flowered beneath the Filaree, but were hard to find in spite of their numbers.

Another surprise has been the length of the blooming season. For instance, Sand verbena was reported on January 28, and found in full bloom on March 25. Owl clover from February 4 through April 1. Many flowers will continue to bloom until late April in contrast to their usual short-lived beauty.

Colors in quite a few flowers were more intense than usual. Some wildflowers we expected to see at higher elevations were in the desert or foothills — whether this was because of the generally fine flowering or because these plants do live here but are usually so few in number that they are ignored, we can't say.

The sizes of some flowers were surprising, too. Poppies more than two inches across, one-inch blossoms on the small-flowered Filaree; Desert mallow and Phacelia larger than usual.

These reports cover intermittent visits to desert areas within about fifty miles of

(Continued on page 44)

ASPECTS OF THE DESERT

When Arizona's deserts bloom as they have bloomed this year, the beauty is breathtaking. In the open you see patches and even sheets of color. Under desert trees and along the banks of the usually dry streams you find a tremendous variety of wildflowers large and small.

Phoenix, and one visit to Organ Pipe National Monument in southeast Arizona. Because wildflower-watching has been uniformly good this year (another unusual situation) we think a chronological listing will give you a better idea of the 1973 wildflower explosion. Special thanks to Margaret Jenkins and Mrs. Lester Luxenberg for their frequent reports. Dates in parentheses show latest date when flowers were seen still in peak bloom.

January 28: Sand verbena (still fine 3-25)

February 4: Blue gilia, Owl clover (4-1), Blue dicks (4-1), Arizona poppy (4-1), Wild rhubarb.

February 10: Velvet rosette, Blazing star, Desert star (3-25), Purple mat (3-25), Lupine (4-1), Filaree (past bloom 4-1), Phacelia (4-1), Desert mallow (4-1), Evening primrose (4-1), Locoweed, Plantain or Indian wheat (4-1), Brittlebush (almost over 4-1), Cane cholla.

February 17: Bladder pod (3-25).

February 18, 19, 20: Arizona Poppy, Phacelia, Desert mallow, Sand verbena, Spectacle pod (3-17), Desert star.

February 24, 27: Fiddleneck (4-1), Filaree, Purple mat, Evening primrose.

March 5-9: Arizona poppy, Desert marigold (4-1), Popcorn flower (4-1).

March 17: Fiddleneck, Popcorn flower, Ajo lily, Spectacle pod, Desert star, Wild buckwheat.

March 25: Brittlebush, Filaree, Evening primrose, Phacelia, Desert mallow, Bead pod, Goldfields, Indian wheat, Desert sunflower, lupines, Fiddleneck, Pincushion flower, Popcorn flower, Evening primrose, Desert dandelion, Purple mat, Desert Star, Rock daisy, Desert marigold, Prickly poppy, Ocotillo, Arizona poppy, Pentstemon sp., Delphinium, Sand verbena.

April 1: Filaree, Desert mallow, Prickly poppy, Lupine sp., Fiddleneck, Popcorn flower, Brittlebush, Phacelia, Arizona poppy, Desert marigold, Goldfields, Lotus, Desert dandelion, Evening primrose, Scarlet gilia, Blue dicks, Owl clover, Comb-bur, Indian wheat, Wild cucumber, Mullein, Pincushion flower, Bowlesia, Rock daisy, Blue toadflax.

FIELD TRIP REPORT

March 10. Peralta Canyon, Superstition Mountains. A threatening sky did not deter a large group from gathering for this foray, and the journey to the site of the day's activities was heightened by masses of **Encelia farinosa** (Brittle-Bush), **Lupinus sparsiflorus** (Desert Lupine), and **Sphaeralcea coulteri** (Coulter's Desert Mallow) in bloom along the roadside. Two areas were explored before entering the canyon, and one of these, an arroyo, was productive of the greatest variety of bloom seen during the entire day. The dark reddish-green young shoots of **Amsonia** growing in the wash intrigued everyone, and an abundance of **Silene antirrhina** (Sleepy Catchfly) was also noted. This is a common weed of the more temperate zones throughout North America rather than a desert associate. After lunch, the canyon was partially explored and the most noteworthy plants seen on the trail were **Quercus turbinella** (Shrub Live Oak) in flower, **Maurandya acerifolia,** one of the Figwort family, clinging to the cliff walls, and **Linaria texana** (Blue Toad-Flax). This is probably only a variety of **Linaria canadensis,** the common weedy blue Toad-Flax of the eastern and mid-western temperate zones of the United States. Probably over fifty species of plants in flower were seen during the day although no exact recording was made. Attendance was 59.

Reporter; J. Harry Lehr
Leader; Rodney G. Engard

Arizona Cactus

PAPER-SPINED PINCUSHION

Toumeya papyracantha

Cactaceae

This inconspicuous little cactus is so well camouflaged by its papery spines that blend with the Blue Grama Grass with which it shares space, that it is easy to overlook unless you creep along the ground on your knees and look into each tuft of grass.

Toumeya papyracantha was shown to Dr. Engelmann who described it in 1849 as **Mammillaria papyracantha** because it was the size of a Mammillaria and because it had papery spines. About fourteen years later he transferred it to the genus Echinocactus because it flowered at the apex (a characteristic of that genus). Britton & Rose, in 1922, set up the new genus Toumeya for it, named in honor of Dean J.W. Toumey who had contributed much information on cacti.

The first plants were found in low hills adjacent to Santa Fe, New Mexico, but very few have been found there since then. Plants are quite plentiful in the Sandia Mtns. east of Albuquerque and also from Holbrook, Arizona south to Snowflake and west to Heber.

The plants grow in colonies and are easy to find only when in flower during May. Each muddy-yellow flower arises from the apex of one of the small young stems which are a half inch in diameter and only two inches high.

Older plants are three-quarters of an inch in diameter and three to four inches tall, but the long papery spines may make a plant look at least three inches in diameter and five inches tall, as the spines arch over the apex of the stem. The flat gray spines are wavy, one-eighth inch wide and up to 1½ inches long, four from an areole, with six to eight ashy-white radials per areole. Plants are usually solitary, but not infrequently the lower areoles, being naked, produce offsets.

The buds on this three-inch high *T. papyracantha* open no more than ¾ in.

It is thought that many rodents, sheep and other browsing animals eat these plants inadvertently, as they are hidden among the grass that is eaten. We have, though, seen sheep eat the grass around the cactus, but not the cactus. Exposing the cactus leaves it susceptible to freezing, since the insulation of the clump of grass has been removed.

This plant grows in alkaline soil in the juniper-pinyon woodland plant association part of Arizona. It is a hard plant to grow in cultivation, even when you replant it in soil from its original location.

Type locality: Between low hills near Santa Fe, N.M.

Distribution: Northeast New Mexico, Albuquerque, central Arizona north of the Mogollon Rim. —WHE

BUR-SAGE
Franserie deltoidea Torr.
Compositae
Sunflower Family

Franseria deltoidea is a perennial rounded, low shrub. Rising from a woody base are numerous ascending brown branches that are ridged and viscid from resinous glands. In height the plant will range from 3 to 6 dm. (1 to 2 ft.). Leaves are dark green above and pale below with a dense mat of short wool. They are alternate in position, and petioled. Leaves are thickened with prominent veins below and measure from 1 to 3.5 cm. in length and from 1 to 1.5 cm. in width. They are narrowly triangular or lance-ovate to lanceolate with truncated bases and acute tips. Margins of the leaf are finely toothed. Flowering can occur from December through April, but most often takes place in March and April. The flowers are unisexual and occur in séparate heads on the same raceme. Staminate heads occur on the terminal spike and are 6 to 7 mm. in diameter. Corollas of the staminate flowers are quite small, measuring only 2.5 mm. in length. The pistillate heads are in short lateral spikes at the base of the racemes and are small, crowded clusters from 5 to 7 mm. in diameter. The pistillate heads are two- or three-flowered. Fruit is broadly ellipsoidal to subglobose about 5 to 6 mm. long. It bears 2 to 3 beaks 1.5 to 2 mm. long. These are awl-shaped and flattened. There are in addition 20 or more strongly flattened, nearly straight spines. The body between the spines is glandular and pilose. This species of bur-sage is in common association with Palo Verde (Cercidium) and Cacti in the southwestern quadrant of Arizona and often is found in nearly pure stands. It is found at elevations from 303 to 910 meters (1,000 to 3,000 ft.) in the Lower Sonoran Zone. It

Eighteen inches high and three and a half feet wide, this low Bur-Sage bush is one of many that cover the uncultivated parts of the Garden.

grows on alluvial plains and on rocky or gravelly hillsides, mesas, and arroyos. Distribution extends from south central Arizona south into Sonora as far as Santa Ana in north central Sonora and Puerto Libertad along the west coast. It has a very localized distribution also in the southern half of Baja California. In Arizona it ranges from western Gila county west and south through Maricopa, Pinal, Pima, and into Yuma counties, but not extending to the Colorado River on the Western border.

Franseria deltoidea has not been used as a landscaping plant other than for replanting new highway right of ways and recovering areas made bare by construction equipment. As far as has been observed, it has not been utilized as forage even by Jackrabbits in times of extreme drought. This species is the most prevalent perennial on the grounds of the Botanical Garden, but appears to be less so than **Larrea tridentata** (Creosote-bush) because of its much smaller size. **Franseria deltoidea** and **Franseria dumosa** are coextensive in their distribution, but the former is found on coarse rocky situations while the latter occupies silty and sandy substrates as a rule.

Very small flowers and the deltate leaves of *Franseria deltoidea.*

REFERENCES:
Benson & Darrow, The Trees and Shrubs of the Southwestern Deserts.
Kearney & Peebles, Arizona Flora
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.
Standley, P.C., Trees and Shrubs of Mexico.

—JHW

EDITOR'S NOTES

(Continued from page 39)

inevitable "dry" years coming up. DO NOT MISS THIS "SHOW", and don't wait too long, because hot dry winds may finish off the flowers in a few days.

Cacti are beginning to flower and will begin to dazzle us from mid-April through the month of May. Trees and shrubs will be in flowers from about April 21 through June 15. Get out and enjoy your desert.

The biennial convention of the Cactus & Succulent Society of America, with members in the Unlted States and Canada, will be held in Las Vegas from May 14 through May 17. Have you made your reservations to attend?

This year eighteen papers and lectures are scheduled, among them a lecture by Your Editor on the Genus Echinocereus, illustrated with slides of all species of this handsome genus of Hedgehog Cacti.

Omissions from last issue, for which we apologize: Charles Garland was awarded third prize in the crafts category. Dorothy O'Rourke was an active volunteer, setting up all the photo slides displays for the Show. Warner Dodd's work with cactus judging and Beverly Dodd's help in the office also passed without mention in the Bulletin, but certainly didn't pass without notice. Really sorry, friends.

THE SLOW AGAVE

We all know that once an agave begins to put out its flower shoot, the last great dramatic action of its stolid botanical life, the shoot shoots up at a tremendous rate. Inches, even a foot a day. Fast as the blast-offs at Cape Kennedy. We all know it. It's one of the "true facts" like rain always coming the day after you wash your car.

Well, the Garden has an agave that hasn't heard the "true facts".

Just outside the Visitors' Building is an **Agave ferox.** As closely as anyone can remember, it first showed the tip of a shoot about last Thanksgiving. And it grew and it grew, and fourteen weeks later when this picture was taken it was a towering five feet five inches. That averages 1½ inches per day. Since we first measured it in March the growth rate has changed. Fourteen days later the height is six feet one and a half inches — a breathtaking rate of a tiny bit more than half an inch a day.

Some day, if the rate doesn't decrease to a minus number, the stalk will put out flowers and, as agaves do, die. We don't think we'll pat its spikey leaves and say "well done". Not this agave. Botanists may explain that this species isn't speedy, but one or two people here simply think that the dumb plant didn't even try.

GARDEN ACTIVITIES

APRIL

Tues.	3rd	CACTOMANIACS meeting	8:00 P.M.
Wed.	4th	CLASS—Cultivation of Trees & Shrubs	3:00 P.M.
Thurs.	5th	LECTURE—Cacti of Mexico	3:00 P.M.
Wed.	11th	CLASS DESERT TRIP—Rackinsack Canyon	8:30 A.M.
Thurs.	12th	LECTURE—Wildflowers of W. Australia	3:00 P.M.
Sat.	14th	FIELD TRIP—Cline Ranch	8:30 A.M.
Thurs.	19th	LECTURE—Desert Botanical Garden doings	3:00 P.M.
Tues.	24th	BONSAI SOCIETY meeting	7:30 P.M.
Thurs.	26th	LECTURE—Arizona Cacti	3:00 P.M.
Sat. & Sun.			
28th & 29th		BONSAI SHOW & DEMONSTRATIONS	9:00-5:00 P.M.

MAY

Tues.	1st	CACTOMANIAC—Potluck Supper	6:30 P.M.
Sun.	6th	ANNUAL MEMBERS' MEETING	3:00 P.M.
Sat.	12th	FIELD TRIP—Skull Valley	8:30 A.M.
Tues.	22nd	BONSAI SOCIETY meeting	7:30 P.M.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVII May, 1973 No. 5

REG-MANNING

SAGUAROLAND BULLETIN

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W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

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Editor's Notes

As I write this, we are looking forward to the Annual Members' Meeting on Sunday, May 6th, when Members will learn of our past year's accomplishments, our projects for 1973-74, and the Garden's current financial state. You will receive this Bulletin after the meeting, but we will carry reports of the meeting in the June Bulletin.

Your Editor attended the American Botanical Garden and Herbaria Annual Meeting at the Los Angeles County Arboretum in Arcadia, California, on April 16th through 19th. There were outstanding speakers, and they and other Garden directors guided our "rap sessions". Trips were made to outstanding botanical gardens along the coast.

In May another trip, when your Garden's director will give an address on the Echinocerei (Hedgehog Cactus) at the National Cactus and Succulent Convention being held May 14th through 18th in Las Vegas, Nevada.

The U.S. State Department recently sponsored two escorted groups of journalists from various parts of the world. One group visited the Garden on April 8th, and the other group on April 14th. On April 24th twenty-two members of the Kintetsu Cactus Tour of Tokyo flew to Phoenix to visit the Garden and then took a bus trip through Mexico. They report that the Garden is well known in Japan. The trips I have made there in recent years are beginning to "pay off", perhaps.

We have had more groups visiting the Garden this year than in past years. Many convention groups now include a visit to the Garden in their "must see" list. When there are interstate meetings and symposia at Arizona State University, the Faculty Wives regularly schedule a Garden trip for the visitors. The tour busses that offer day trips to visitors to the Valley now stop to see the Garden much more frequently, and we have had an increasing number of out-of-state college groups here this year, students of botany or forestry who find the Garden very much worthwhile.

Our cactus have been "busting out all over", and many visitors complain (with a smile) that they have never run out of camera film so fast as here at the Garden. Besides the plants here previously, the thousands of plants that we brought to the Garden from the area now covered by the eastern end of Shea Blvd. are now in great color. It certainly is interesting to watch photographers working out all different angles to get The Right picture of the plantings.

Cacti in flower, starting in early May, include about 20 species of hedgehogs, 10 species of prickly pears, star cacti, barrels, trumpet cereus, 20 to 30 species of pincushions, and more.

Palo verde trees, desert willow, mesquite, ironwood and others will be flowering mid-May to mid-June. There has been a continuation of coolish weather, and many one-day cacti have been opening for two or three days.

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WILDFLOWERS — WHERE TO GO

Everyone has his favorite spot for wildflower watching. Ours has been, in past years and even more this year, Rackensack Creek. It has always had a variety of wildflowers, it's never crowded with other picnickers, and it is accessible from the Phoenix-Scottsdale area via good roads, partly paved, partly well-graded and wide. Perhaps we should keep its location a secret, but we are suffering from an attack of altruism and will let you in on the secret.

An easy afternoon drive, or a more leisurely all-day picnic trip could begin like this: Drive straight north on Scottsdale Road until you see what we call the Rock Pile, directly ahead of you where the highway curves left to the entrance to Carefree. A dirt road only a few hundred yards long takes you right up to this tall pile of big boulders which has a great variety of wildflowers in March and early April (we counted thirty-three different ones in flower on April 8th). Even in late April we found about twenty-five kinds still in flower and added Desert Lavender to our list.

Drive through Carefree and turn right at the highway that leads to Horseshoe Dam, Bartlett Dam and Seven Springs. The road to the dams forks off to the right about five miles north, but you should take the left fork with the sign pointing to Seven Springs. In about five miles you will cross Blue Wash, usually dry or with a trickle of water, and recognizable for its size and the blue-gray rocks.

This road is up-and-down and curving, so our mileage is only approximate. (If any of our readers ever makes an odometer check, we'd appreciate learning the more accurate mileage.)

About two miles past Blue Wash, at the top of a steepish hill, a rough but reasonably wide and easy dirt road turns right up a slope to an old mine. Park along the road or drive up the mine road a bit where you will find an easy turnaround. This is a good place for an easy stroll along a ridge with great views on either side. We've found masses of Whispering Bells here, Wright's verbena, tall and handsome Chia, and one one occasion in 1973 about twenty different kinds of flowers in bloom. If you weren't heading for Rackensack Creek it would be a swell picnic place where you could see poppy-covered mountains in every direction. Even a fifteen-minute stop is worthwhile.

Now, on to Rackensack Creek. Many years ago there was a sign identifying it, but now you must know where it is or check your mileage. Rackensack is about two miles beyond this mine road turnoff, along the main road, and you must ford the creek (no trouble) before you turn left and drive up along the creek. You can drive in as far as a mile, but you will find yourself looking for a wide space to park long before you get to the end of the road.

(If you miss Rackensack, drive to Camp Creek settlement which is only a half mile farther on, and come back.)

Water was running in Rackensack until early May this year — and a picnic within sound if water is something special. As for the wildflowers, which are, after all, what we're talking about, you have steep hillsides endowed with loads of poppies, lupines and huge white evening primroses that have five-inch flowers wide open at lunchtime. There's a lot of golden monkey-flowers along the creek, and lots of big and small flowers of all kinds and colors wherever you want to stroll while eating your devilled eggs: Miner's lettuce with its tiny flowers but interesting leaves, blue gilia, yellow-flowered pentstemon, owl clover, lotus, phacelia, and any number of the low-lying little flowers that show their charm only if you get down to their own level, the assortment of pretty things known accurately (if inelegantly) as "belly flowers."

The elevation at Rackensack is between 3200 and 3500 ft., which means that it's a

good flower place even after the low desert has dried out.

We've been talking about Rackensack Creek as a place to go in the spring, and you may want to keep these notes to use next spring, but it's not only a one-season place. Something is in bloom there even in summer and fall. If you're a bird watcher as well as a flower watcher Rackensack Creek is a worthwhile stop.

But don't tell anyone. We want to keep the crowds away.

WILDFLOWER REPORTS

These are the last reports of the great spring flowering of 1973. We may not live to see another spring like it, but wasn't it great!

Rackensack Creek. This area was visited three times in April: April 8, April 11 (field trip), and April 21.

April 8: Desert Mallow, Lupine species, Prickly Poppy, Desert Marigold, Filaree, Rafinesquia, Popcorn Flower, Bluedicks, Fiddleneck, Wright's Verbena, Lotus pumila, Lotus rigida, Fairy Duster, Phacelia (3 species), Evening Primrose (3 species), Pussytoes, Desert Dwarf Daisy, Chia, Owl Clover, Brittlebush, Brickellbush, Poppy, Whispering Bells, Blue Gilia, Trailing Four O'Clock, Wild Cucumber, Pentstemon, Tackstem, Buckbrush, Dock, Monkey Flower, Miner's Lettuce, Draba, Fleabane, Barberry, Golden Smoke, Wild Carrot, Rock-purslane, Red-maids, Indian Wheat, Jojoba.

April 11: The above plus Dudleya collomae, Catclaw, Saguaro (very early!), Mormon Tea, Yucca baccata, Wild Snapdragon.

April 21: Very like the April 8 list, but ten flowers had passed their bloom and six new plants were added. No longer in bloom: Filaree, Brickellbush, Brittlebush (nearly gone), Trailing Four O'Clock, Wild Cucumber, Tackstem, Draba, Barberry, Rock-purslane, Red-maids. New flowers seen: Hedgehog Cactus, Desert Lavender, Wild Four O'Clock, Yucca baccata, Indian Paintbrush, Melampodium.

The length of the blooming period this year continues to astound us. If you check with the April issue of the Bulletin you'll see how very long it has been for many short-lived flowers.

Peralta Canyon via Saguaro Lake, April 10: Desert Mallow good, Prickly Poppy, Brittlebush, Lupine sp., Phacelia sp., Rafinequia, Pincushion Flower, Indian Wheat, Lotus pumila, Lotus rigida, Bur-sage, Owl Clover, Desert Poppy, Desert Marigold, Goldfields, Bluedicks, Filaree (**Erodium cicutarium**), Heron Bill (**E. texanum**), Fiddleneck, Popcorn Flower, Evening Primrose (three species), Whispering Bells, Yellow Gilia, Canaigre, Desert Mallow, Hedgehog Cactus, Lupine sp., Wild Buckwheat, Prickly Poppy, Dwarf Desert Daisy, Bowlesia, Purple Mat, Amsonia, Threat Plant, Monkey Flower, Daucus, Wright's Verbena, Pussytoes, Toadflas, Fairy Duster, Jojoba.

EDITOR'S NOTES

(Continued from Page 51)

The Phoenix Bonsai Society had another fine show here on April 28th and 29th. Their displays and demonstrations are always delightful and informative and always attract a good crowd. The show benefited from the new insulated roof we installed on the Auditorium last winter. The Auditorium remained quite cool, a pleasure after the heat there during the show last year. Even in late April the heat build-up in the Auditorium used to be unpleasant. We hope to add a cooling unit there in the near future so that we can schedule group meetings all spring long and through the intense heat of the summer.

Mexican Cactus

VIEJOS
Cephalocereus purpusi
Cactaceae

This thin-stemmed grotesque "Viejos" (Old Men), also known as "Old Goat", does not command much attention in its habitat, yet it is a plant with clear green stems that grows up to ten feet tall and spreads about six feet.

It is usually a single-stemmed plant, but we have found many old branched plants among the limestone rocks ten miles east of Villa Union, Sinaloa, on the road to Durango, and also on the pedregal (sharp lava flows) between Tepic and Guadalajara where they share their setting with poisonous snakes and scorpions. In the latter location the "Viejos" are low, sprawling and scrawny.

This plant was collected in 1910 by Rose, Stanley and Russell at Mazatlan, Sinaloa, on the hill east of town, overlooking the sea. It was named by Britton and Rose in 1920 for the veteran collector, Dr. C. A. Purpus, who had collected the plant several years earlier than the recorded collection.

The thin stems are 1½ to 3 inches thick, with twelve rows of thin, low ribs, with areoles closely set no more than ½ inch apart. Young growth has long, silky white hair which drops off in age. Spines are bright yellow, ageing into gray. They are inch to 1½ inches long and porrect.

This is a hard plant to establish from stem cuttings, as the cuttings are slow to send out roots. Small juvenile plants seem to be even less amenable to transplanting.

Adult plants do not appear to colonize, but are remote from each other. Flowers are pale rose, opening at night and closing about nine in the morning. They are followed by small round green fruits, 1 to 1½ inches in diameter, containing rugose black seeds.

Type locality: East of Mazatlan, Sinaloa.

Distribution: Southern Sonora, coast of Sinaloa, to northern Nayarit and Jalisco.

REFERENCES

Bravo, Las Cactaceas de Mexico
Britton & Rose, The Cactaceae

——WHE

"Viejos" photographed in the forbidding landscape near Mazatlan.

ASPECTS OF THE DESERT

First of the cactus to bloom, the Hedgehog opens in time to join the last of the spring wildflowers. It is followed by the Chollas, the Prickly Pears, the Barrels, and finally the Saguaro.

A NEW PLANT FOR ARIZONA

It is hard to discover a new plant in Arizona, but one has now established itself, though introduced by man. It is a real addition to Arizona's flora, reproducing in the wild and spreading without human help.

The African Daisy (or Cape Marigold), **Dimorphotheca aurantiaca** is a relative newcomer to gardens, having been brought to Europe in 1908. It has been a popular garden plant in central Arizona since the 1940s. In 1958-60 the Garden Clubs of Mesa planted the median strip of Highway 80 with African Daisy and some wildflowers. The result was a long band of orange and yellow flowers that throve and reseeded for several years until the highway department had to widen the road. Seeds from the piles of dirt standing along the roadsides were helped to disperse by the winds from the southwest which blew them into the foothills on the north side of the highway. There the seeds germinated, produced more seed, and over the years new seeds have blown north and over to the Salt River below Saguaro Lake. These "African Daisies" are now found on the outskirts of the Phoenix metropolitan area, Cave Creek, Carefree, Gila Bend, Yuma, Havasu City and other cities, sometimes as far from town as the Estrella Mountains — at least twenty-five miles from Phoenix — all "escapes" from gardens, and all now naturalized in the wild.

Some of the plants are now perennials as they are in their home in Southwest Africa, and have immense flowers, as much as three inches in diameter.

Dimorphotheca is a genus of composites having about twenty species of herbs or sub-shrubs native to South Africa. Leaves are alternate, often rough to the touch. Flower heads are radiate, terminal, solitary, with the ray flowers female. Disk florets are variable, but usually the outer florets are perfect and the inner florets abortive. The involucre is a single series of linear, slender-pointed scales. Achenes are without pappus and straight, those of the ray florets being three-cornered, warted or sharply toothed, and rarely smooth; those of the disk florets flattened, with two thickened wings wider than the seed.

D. aurantiaca (The specific name means orange-colored) is a perennial in the wild, but an annual in cultivation. The stems are spreading, branches four to twelve inches high terminating in a solitary flower head which is two to two and a half inches in diameter, bright orange, with the disk golden-brown tipped with metallic blue. The native habitat is Little Namaqualand which is along the west coast of Southwest Africa, 350 miles north of Capetown. The plant was first described in 1774.

D. aurantiaca has also been known as **Calendula tragus** and **Castalis tragus.** Many hybrids have been developed, so that now you can find African Daisies in shades of white, orange, yellow, apricot and salmon. What is sold as **D. aurantiaca** is usually **D. sinuata** or a hybrid of **D. sinuata** and **D. pluvialis.** This plant which has now established itself in vacant lots and even into secluded areas of undisturbed land is a welcome addition to our

flora. It is certainly much more attractive than the many foreign grasses and weeds brought unsuspected into Arizona in imported grain seeds.

REFERENCES

Bailey, Standard Cyclopedia of Horticulture
Harvey & Sonder, Flora Capensis
Royal Horticultural Society, Dictionary of Gardening

——WHE

Arizona Wildflower

GROUNDSEL
Senecio millelobatus

Compositae
Sunflower Family

In the immense Composite Family, the genus Senecio is one of the very largest, if not the largest of all. There are over 1400 species of Senecio and they are found as herbs, shrubs and trees in nearly world-wide distribution. Twenty-seven species are recorded from Arizona, but there may be several more.

Senecio millelobatus is a handsome species with bright yellow flower heads 1¾ in. across, dark green leafy stems, and dark green many-lobed leaves which are erect and almost parallel to the stems. It grow at roughly the same altitude as Ponderosa Pine (4500 to 7000 ft.), and is found in scattered colonies or islands in the semi-open spaces of ponderosa forests. The accompanying pictures were taken near Thumb Butte, west of Prescott, Arizona, at an elevation of 5300 feet. The exception to this higher-altitude distribution is one location at about 2000 ft. along the Agua Fria River in northern Maricopa County, where **S. millelobatus** is doubtless a stray from farther north.

The height of **S. millelobatus** is from six to sixteen inches, and the lobed leaves (as **millelobatus** implies but exaggerates) are one-half inch to four inches long, with ten or more lobes on each side.

The disk flowers are in a tight half-inch cluster, and there are eight to twelve rays.

S. millelobatus is found from Texas west to Arizona and south to Chihuahua. The

Last May sixth, near Prescott, we found large numbers of *S. millelobatus* in full bloom. These plants averaged 12 inches high.

blooming period is from March through June.

Another species, **S. cruentes**, is the familiar Cineraria, popular with gardeners for its five-inch-wide flowers. The different hybrids range in color from white and pink through bright blues and purples.

Groundsel has been used medicinally for at least several thousand years. The English name can be traced back to two Anglo-Saxon words that mean "infection-absorber." The species of Senecio being widely distributed, uses of the plants are found in widely separated parts of the world.

Most of the bright-yellow Groundsel flowers here had only 8 ray flowers.

The situation would not be remarkable if, like the mints, Groundsel were a strong or nasty-smelling plant. Folk medicine is frequently based on the principle that anything nasty must be good for what ails you, and the nastier the better.

But Groundsel neither looks nor smells like a "magic" healing herb. So how was it found out in many different areas of the globe that Groundsel is medicinal?

Hariot says of **S. vulgaris**, a European species, that it is "odorless and more or less tasteless. Nothing about it suggests its attributes." Add to this the fact that a number of species are poisonous, and you are even farther away from the answer to the question of how Senecio became a folk medicine.

Here are only a small number of ways that some of the Groundsels have been used: as liniments, lotions, aperients, to heal wounds, to reduce swellings, as a gargle, to relieve rheumatism, as a purge, as a poultice, as an emollient, for jaundice, for liver trouble, and for spitting blood.

Also cooked in milk or fried in fresh butter and applied for the relief of gout, cooked and used for eye infections and fevers and leprosy, powdered as both a dog-killer and a cure for rabies, and used in **England** (says M. Hariot with proper French scorn) to worm horses.

To conclude on a less clinical note, we refer to M. Hariot again: "A medicinal plant with which one nourishes rabbits . . . and the seeds are nourishment for little birds."

REFERENCES
Curtin, Healing Herbs of the Upper Rio Grande
Hariot, Plantes medicinales
Kearney & Peebles, Arizona Flora
Martinez, Plantas medicinales de Mexico
Rickett, Wild Flowers of the U.S., Vol. IV

—LD

Arizona Cactus

NEEDLE-SPINE PINEAPPLE
Echinomastus erectocentrus
Cactaceae

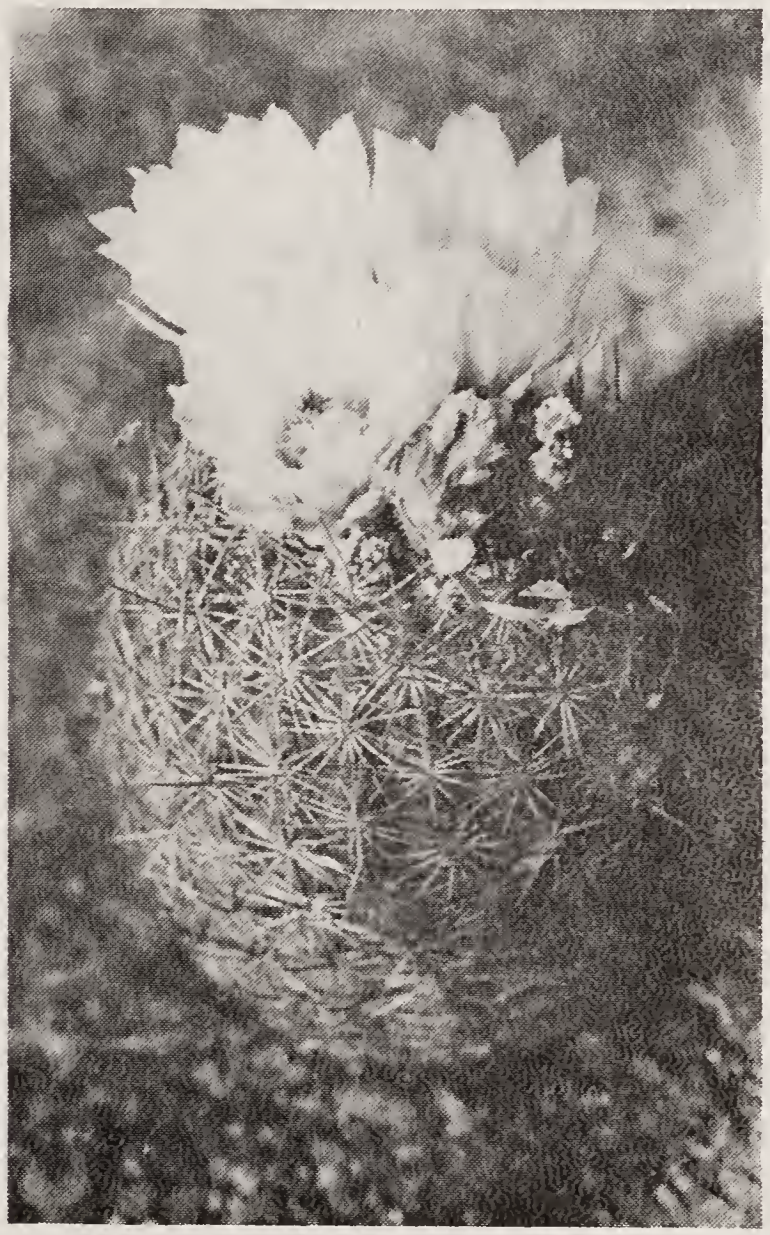
Coulter described the plant in 1896 in Contributions to the U.S. Herbarium as **Echinocactus erectocentrus**, as the plant looked like a single-stemmed hedgehog cactus with erect central spines. In 1922 Britton & Rose erected the genus Echinomastus, the name referring to the spiny nipple. In 1969 Lyman Benson placed it in the genus Neolloydia as the new combination **Neolloydia erectocentra.**

This simple, short, cylindrical plant grows three to six inches tall and three to four inches in diameter. It has short spiny tubercles out of which spread about fourteen straight radial spines, reddish in color, and one or two central spines, elongated, erect and ascending.

The light lavender or light pink flowers, one to 1½ inches in diameter, are fragrant and attractive, with white stamens and a red pistil. They appear in the middle of April.

The fruit, which is light green, dries to tan and splits vertically to disclose the black, papillate seeds which are one-sixteenth of an inch long.

These plants are found growing in alluvial fans and hills of the upper Arizona desert and grasslands at about 3000 to 4000 feet altitude. They are easy to transplant (do not transplant without the proper



Flowers of this "pineapple" are very large in proportion to the body.

permits), and will easily re-establish themselves in the low desert if they are protected with filtered shade from the hot summer sun.

Type locality: Benson, Arizona.

Distribution: Southeast Arizona. Pima County to western Cochise County, and south into Mexico.

REFERENCES
Benson, The Cacti of Arizona
Britton & Rose, The Cactaceae
Earle, Cacti of the Southwest

——WHE

At eye-level the long, erect central spines are most noticeable.

When the visitors leave . . .

. . . we go to work. There's an idea around that the Garden shifts to low gear when summer comes. The winter visitors have gone, there are no more classes and lectures, the tour busses come no more. We're supposed to relax. Ha!

The long hot summer is an intensely busy time at the Garden for everyone. Right now Dr. Gentry and Rodney Engard are on a trip to the Coahuila Desert. Later, Dr. Gentry and Lyle McGill are planning a trip to Baja California. Your Director has trips planned for June and September, as well as a week in August attending the International Society for Nomenclature and Taxonomy. All of these trips have a definite connection with the work of the Garden.

Here at the Garden maintenance and repairs go on in the summer months. A sampling of the work to be done this summer includes: replacing the inadequate water line from the edge of our property to the buildings; black-topping paths, painting; renovating woodwork the termites got at; building the students' entrance — a job we planned for last winter but had to postpone because all hands were needed to fight 1973's enormous weed crops.

We're going to intensify our work of making identification labels for many more plants — our visitors will like that. There are new plants ready to be set out in the Garden, including plants we have started from seed. And we are attempting to complete our files of photo slides of cacti in bloom.

GARDEN ACTIVITIES

MAY

Tues.	**1st**	CACTOMANIACS—Potluck Supper	**6:30 P.M.**
Sun.	**6th**	ANNUAL MEMBERS' MEETING	**3:00 P.M.**
Sat.	**12th**	FIELD TRIP—Skull Valley	**8:30 A.M.**
Tues.	**22nd**	BONSAI SOCIETY meeting	**7:30 P.M.**

No CLASSES or LECTURES are given from May through October but the GARDEN is open daily 9 A.M. - 5 P.M., including weekends and holidays.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVII June-July, 1973 No. 6

REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

VOL. XXVII | June-July, 1973 | No. 6

Arizona Cactus and Native Flora Society

EXECUTIVE BOARD

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President.....John H. Rhuart
Vice President.....Edward Burrall
Treasurer .....Tom Goodnight
Secretary .....Angela Bool
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Chairman, Les Mahoney
James Cahill, Mrs. Geraldine Eliot, Mrs. Charles Gilliland, Mrs. Otto E. Myrland, Miss Eleanor B. Sloan, Donald W. Hutton

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Cover photo—Mourning dove and fledgling
(the rumpled bunch of feathers in front)

Desert Botanical Garden of Arizona

STAFF

Director ..... W. H. Earle
Research Botanist ..... Dr. Howard S. Gentry
Horticulturist ..... Rodney G. Engard
Curator of Herbarium ..... J. Harry Lehr
Secretary ..... Claudia Maule
Research Secretary ..... Bonnie Foster
Bookstore ..... Ann Shelstad
Maintenance & Bookstore ..... Lynn Trainum
Maintenance & Bookstore ..... Donald C. Shelstad
Student Horticulturists ..... Lyle A. McGill, David Squire

Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

1972-73 was the year of the big rains, big floods, big weeds — and, to us, the big income. $153,960 compared with $135,915 for 1971-72. (Because of accounting procedures, we had to list under Income the short-term loan of $16,000 in 1971-72, and that distorts the total income figure for the year.)

A new source of funds is the National Science Foundation's grant to the Garden (with Dr. Gentry the principal investigator and botanist) for study of the Agave Family. The grant's payment to us of $2080 was for the use of our facilities, including the Herbarium, for utilities and insurance, and for personnel and partial wages. This will continue for two more years, or to the fall of 1975. We are certainly proud of the program and the research which will further the Garden's desire to participate in scientific botanical work.

An interesting note is that we increased our purchases by $5000 over last year yet our sales showed an increase of $12,578. Lest you think we're overcharging customers at our gift shop, we had better explain. Some of the goods we were lucky to buy in quantity at an unusually low price, and we sold more than 3000 packages of seeds that we had collected and packaged ourselves. That was practically all clear profit. The seven different seed packages we sell are always popular. They are Arizona Cacti Mix, Mexican Cacti Mix, Saguaro, African Daisy, Gold Poppy, Wildflowers and Penstemon.

During the past year the Garden has received generous contributions. Many gifts of large plants have been moved into the Garden to fill unplanted desert areas and to border some of our bare paths. We certainly thanks those persons who have contributed money, plants and books and presented memorials to the Garden for some loved one who has passed away.

You may notice that in the anticipated budget for next year the estimated income from contributions is low. We aren't pessimistic — we always give a low estimate for this particular item.

Our expenditures are about in line with those of 1971-72. Wages are up $4000, thus increasing payroll taxes $700. Monthly publication of the Bulletin has risen to about double due to paper, printing and mailing costs, and higher prices for the cards that go in each copy. Utilities have increased 25 percent because of more use of the buildings — it costs twice as much to cool our desert buildings as it does to heat them.

Our retirement fund expenses were about half of last year's when we had a large deposit premium to make.

The number of members changes from year to year. As you know, people taking classes at the Garden are required to become members, and a reasonably predictable number do not renew membership in the following year. It is good to note, however, that many members have voluntarily upped their membership classifications from the basic $5.00 a year to $10.00 or even more.

Capital improvements totalled only $3875 this year, as against $36,187 last year, but remember that the 1971-72 figure included $33,187 for the new Herbarium.

Our attendance of 98,607 was 3,080 lower than last year (weather had a great deal to do with that) but the voluntary admissions increased from an average of 22 cents per person to 24 cents per person. The sales increased from 77 cents to 91 cents per person, or about 20 percent, which is a very healthy increase.

As conventions in the Phoenix area increase, we plan to do more to make a visit to the Garden a part of convention activities. We find that the conventioneers who do visit us are very pleased with their introduction to the desert.

In our improvements for 1973-74 you'll find listed "10 additional herbarium cases." We completed the Herbarium in the spring of 1972, equipped with twelve large herbarium cases 7 ft. tall by 3 ft. wide, and fourteen half cases. These cases have been filled so fast by Dr. Gentry and Curator Harry Lehr that they will be completely full this fall, so ten cases have been ordered that will cause the Herbarium to be slightly rearranged but will not in any manner interrupt the Agave research program.

Our volunteers have been most faithful through the year. Several have moved north for the summer but will be back in the fall. Florentine Gebert, who worked each Tuesday in the Visitors' Center for the past six years has retired to Idaho with her husband. We'll certainly miss her.

To get back to the big weeds we spoke of at the beginning — we had a record of seven continuous months of weeding the Garden due to the continuous cool moist days (and rainy days) not experienced since the winter of 1941-42. We should have been doing planting, but we were removing crop after crop of weeds as they were fast becoming potential fire hazards to other plants and our buildings. This is one record we hope we'll never equal again.

Each year we issue a list of seeds of Arizona plants. This year there were 75 kinds listed for exchange. We collect the seeds from the plants in their native habitat and package them for exchange with botanical gardens all over the world. From the lists sent out this year 381 packets of seeds have been requested by 33 institutions, and more requests keep arriving. This is not a one-sided deal as these institutions also issue seed lists from which they can reciprocate.

Another honor has come to the Garden in that your Director was elected a Fellow of the Arizona Academy of Science "for outstanding contributions to science and continued support of the Academy" at its annual meeting on May fifth in Tucson.

FIELD TRIP

The final field trip of the most flower-filled spring was on 12 May 1973, from Phoenix through Wickenburg to Hillside via Route 93, State Rts. 97 and 96 to Hillside and return via Yarnell to Wickenburg and Phoenix. 27 people in the caravan.

Phoenix to Wickenburg: Cercidium floridum, Cercidium microphyllum, Helianthus annuus, Prosopis juliflora, Baileya multiradiate (dominating roadside vegetation), Cassia couvesii, Hymenoclea pentalepis, Eriogonum inflatum, Encelia farinosa, Fouquieria splendens, Opuntia glauca, Argemone platyceras, Tamarix pentandra, Yucca elata, Psilostrophe cooperi, Salvia columbariae, Echinocereus engelmanni.

Wickenburg to Rt. 97 (including some of above — Elevation 2600 ft.): Krameria greggi, Astragalus praelongus, Ailanthus altissima, Lupinus sparsiflorus, Erodium cicutarium (almost gone), Larrea tridentata, Sphaeralcea coulteri, Plantago insularis, Alliona incarnata, Atriplex elegans, Boerhavia coulteri, Eriogonum divergens, Heterotheca subaxillaris, Convolvulus arvensis, Phacelia distans, Phacelia crenulata, Senecio monoensis, Opuntia basilaris (very fine, abundant), Rumex hymenocephalus, Stanleya pinnata, Yucca brevifolia, Gilia spp., Cirsium neomexicanum, Melampodium leucanthum, Hyptis emoryi.

Rt. 97, Rt. 96 to Hillside (approximately 2200 ft. elevation): Opuntia chlorotica, Hymenothrix loomisi, Monoptilon bellidoides, Opuntia spinosior, Rafinesquia neomexicana, Salazaria mexicana, Langloisia setosissima, Lotus tomentellus, Nama demissum, Eriophyllum lanosum, Euphorbia albimarginata, Daucus pusilla, Acacia greggi, Calliandra eriophylla, Porophyllum gracilis, Nicotiana trigonophylla, Mentzelia nitens, Dudleya pulverulenta, Opuntia phaeacantha, Delphinium amabile, Calochortus kennedyi, Baeria chrysostoma, Pentstemon parryi, Pentstemon haematocarpus, Pentstemon eatoni, Berberis haematocarpa.

Leaders, W. H. Earle, J. Harry Lehr.

MEMBERS' ANNUAL MEETING

An unexpectedly large group of members made this meeting the best in years. John Rhuart, President of the Board, opened the meeting at 3 p.m. Sunday, May 1, 1973. Secretary Angela Bool read the minutes of the last meeting, held on May 7, 1972.

Board Member Alice Feffer, along with Garden Member Lela Turner, tabulated the mailed-in votes, and John Eversole, Tom Goodnight and Mildred May were re-elected for three-year terms.

The past year's activities and financial returns were reported by Director W. H. Earle, and plans for 1973-74 were mentioned and discussed.

Many of the members offered constructive suggestions that would aid the Garden in the near future. These suggestions will be given to the Annual Board Meeting later in May.

38th ANNUAL BOARD MEETING

Members of the Board and their spouses made up the busy dinner meeting held at the Kiva Club in the Townehouse on May 22nd. Four members were absent, three members were attending meetings out of state and one was ill.

Secretary Angela Bool read the minutes of the last Board meeting. It was suggested that copies of the last previous meeting's minutes be mimeographed and mailed to each Board member prior to the ensuing meeting.

Alice Feffer reported on the Advertising Committee's decision that the Garden cease advertising in local tourist publications. The results of this decision have saved the Garden over $900, and there has been no noticeable drop in attendance. She also reported on the issuing of certificates to persons attending and completing the Garden's classes on understanding desert plants. This resulted in a much better sustained attendance for the six-week courses. Board Member Don Hutton generously hand-lettered the 90 or more certificates awarded.

Treasurer Tom Goodnight reported on the increased income, noting especially the increased amount of sales in our Visitors' Center.

Vice President Edward Burrall reviewed the retirement fund and noted that the premium will be higher this year since Donald and Ann Shelstad have been employed for three years and are now eligible to participate in the fund.

Les Mahoney, Chairman of the Advisory Board, discussed an estimate from a plumbing company on the cost of installing a new water line into the Garden from the City Parks pipe line. This 2-inch line is to replace the present 1¼-inch line, installed in 1933. It was suggested that additional estimates be obtained and noted that the work may necessitate blasting since the line goes through rocky and caliche areas.

President John Rhuart reported on the Members' Meeting of May 1st. Re-elected to the Board were Chairman John Eversole, President John Rhuart, Treasurer Tom Goodnight and Secretary Angela Bool.

ARIZONA CACTUS & NATIVE FLORA SOCIETY, INC.
SPONSORING THE
DESERT BOTANICAL GARDEN
FINANCIAL REPORT
5-1-72—4-30-73

	COMPARISON 1972-1973	1971-1972
ASSETS		
Accounts Receivable	$ 624.45	$ 251.81
Inventory	13,068.35	13,623.08
Deposit-State Compensation Fund	390.00	325.00
Cash:		
Retirement Fund	9,880.83	8,535.88
VNB-Checking Account	8,221.41	5,864.38
VNB-Savings Account	25,513.80	10,016.53
1st Fed. Savings (Cert. of Dep.)	3,595.17	3,411.32
1st Fed. Savings-Savings Acct.	2,862.15	2,243.68
Petty Cash, pop machines, cash registers	302.65	324.40
	$64,458.81	$44,596.08
In Trust:		
Clifford M. Schroeder Memorial Fund	$ 638.70	$ 606.48
LIABILITIES		
Accounts Payable	$ 49.05	$ 52.00
Arizona State Compensation Fund	83.46	53.30
Arizona Withholding Tax	59.84	45.46
Arizona Unemployment Tax	125.97	93.52
Federal Unemployment Tax	70.80	70.45
	$ 389.12	$ 314.73
INCOME		
Retail Sales	$90,137.77	$78,559.14
Retail Sales Tax	2,551.24	1,436.97
Wholesale of Garden Books	4,713.11	4,286.82
Wholesale of Garden Seeds	2,230.65	2,147.14
Contributions (Including C. C. Pidgeon Memorial of $315.00)	2,690.71	357.76
Voluntary Admissions	23,659.99	23,371.69
Memberships	7,660.87	6,943.00
Endowment	16,000.00	16,000.00
Library Fund Contributions	205.95	702.53
Interest and Dividends	1,058.90	1,775.48
Herbarium Fund	614.34	126.17
Miscellaneous	357.28	209.00
Valley National Bank Loan	00.00	16,000.00
Indirect Costs-Natl. Sci. Foundation Grant (Agavaceae)	2,080.00	00.00
	$153,960.81	$151,915.70

EXPENDITURES	1972-1973	1971-1972
Purchases for bookstore resale	$48,662.54	$43,300.58
Arizona retail sales tax	2,469.98	2,736.38
Gross wages	46,376.92	42,352.97
Payroll taxes, Federal employment	3,268.04	2,599.82
Office supplies and stamps	1,273.79	1,696.52
Library books, subscriptions, supplies	380.10	529.47
Herbarium supplies	310.14	406.61
Monthly Saguaroland Bulletin	3,616.42	1,960.50
Utilities	4,201.31	3,326.63
Fleet expenses	1,836.14	2,123.60
Insurance-Life, Accident, Hosp.	2,930.60	2,559.29
Retirement fund	7,096.43	17,197.90
Insurance-State Comp. Fund	433.73	674.07
Insurance-Fire, Theft, Liability and Property Damage	2,329.00	2,326.40
Cactus Show	568.30	444.21
Travel, Entertainment, Public Relations, and Miscellaneous	1,062.49	859.70
Advertising	1,362.98	922.96
Garden and Building Maintenance	1,837.10	1,724.55
Lease	25.00	25.00
Wholesaling books	00.00	26.71
VNB Loan and Interest	00.00	16,105.78
Transfer of funds	00.00	13,000.00
CAPITAL IMPROVEMENTS:	3,875.39	36,187.05
Herbarium sink cabinet, $103.95		
Herbarium sink hardware, $26.29		
Electric heater, $22.37		
New portable PA system for lectures classes, etc., $197.55		
Insulated roof on auditorium, $2870.00		
Self-focusing carousel projector, $201.58		
Chair for lectures, classes, etc., $14.15		
3M Copy machine for office and library, $439.50		
	$133,916.40	$192,996.79

1973-1974 Garden Improvement Program

Lay new water line (2200′ of 2″ pipe)	$ 8,000.00
Add 10 herbarium cases to Herbarium	2,600.00
Install student entrance	500.00
Black-top paths	1,800.00
Painting and general repairs	1,100.00
Black-top service road	6,000.00
Plant identification labels	1,200.00
Erect bronze "date" plaques on bldg.	320.00

Planting new plants	500.00
Erect metal building for storage of our printing (books, Nature walks, etc.)	325.00
Erect plant nursery	1,100.00
	$22,445.00

ATTENDANCE of **98,607** persons contributing **$23,659.99** or **.24** per person as Voluntary Admissions, compared to **101,687** persons contributing **$23,371.69** or **.22** per person during 1971-1972.

RETAIL SALES of **$90,095.02** divided by **98,607** persons averaged **.91** per person, compared to **$78,559.14** divided by **101,687** persons averaging **.77** per person during 1971-1972.

MEMBERSHIPS:

1131	1972-1973 members	**1353**	1970-1971 members
1239	1971-1972 members	**1113**	1969-1970 members

The following groups met AT THE GARDEN:

88 Grade Schools	3,988
16 High Schools	713
18 Colleges	486
7 Universities	341
14 Boy (& Cub) Scouts	180
10 Girl (& Brownie) Scouts	164
6 Campfire Girls	55
6 Private Schools	252
1 Garden Club	60
2 Church Groups	52
4 Conventions	241
5 Handicapped Groups	89
9 Cactomaniac Meetings	457
1 Statesmen's Club	40
7 Pre-school or Headstart	316
1 Summer Migrant Project	82
1 Loretta Young Youth Project	50
1 PAC meeting	3000
1 Survival Project	35
1 Fashion Models for Photos	6
1 Group from Japan	24
1 Group of Foreign Newsmen	12
24 Garden Lectures	620
18 Desert Plant Classes	540
9 Flower Preservation classes	126
3 Bonsai Fall & Spring Show Demonstrations	2879
1 Annual Cactus Show	10,812

Lectures were given to the following groups AWAY FROM THE GARDEN:

8 Field trips	432
2 Statesmen's Club lectures	79
8 Garden Clubs	153
1 Univ. Women's Fiesta, ASU	3700
1 Valley Garden Show	1100
1 Home Landscaping Fair	2300
14 Miscellaneous groups	

ANTICIPATED BUDGET for 1973-1974:

Bookstore sales	$ 88,000.00
Wholesale seeds	2,200.00
Wholesale Garden books	4,400.00
Contributions	1,100.00
Voluntary admissions	26,400.00
Endowment	16,000.00
Memberships	7,700.00
	$145,800.00
Retirement fund	9,901.56
Purchases for Bookstore	$44,000.00
General operating	9,450.00
Bldg. & improvements	8,000.00
Fleet operation	2,000.00
Utilities	4,630.00
Insurance	8,750.00
Sales Tax	2,700.00
Gross Wages	49,500.00
	$138,931.56

NATIONAL SCIENCE FOUNDATION GRANT No. BO-35481
FINANCIAL STATEMENT
1972-1973

Grant issued on three-year basis running from September to September.
TOTAL AMOUNT OF THREE-YEAR GRANT: $34,900.00.

Amount due first year:	$10,600.00
Amount received to date:	6,957.00
Amount due before 9-1-73:	$ 3,643.00
Expended to date:	
Payroll	$ 1,932.17
Mileage	493.68
Per diem expenses	628.00
Supplies	42.84
Indirect costs (use of facilities, partial wages, etc.)	2,080.00
Miscellaneous	405.98
	$ 5,582.67
Balance on hand:	$ 1,374.33
	$ 6,957.00
Amount due on grant for second year:	$10,700.00
Amount due on grant for third year:	13,600.00

FLOWER PRESERVERS
FINANCIAL STATEMENT
1972-1973

INCOME:	
Sales	$ 2,401.51
Class registrations	1,158.85
	$ 3,560.36
EXPENDITURES:	
Supplies	$ 2,220.14
Individual percentages	253.83
Arizona retail sales tax	54.00
Miscellaneous	1.50
	$ 2,529.47
Balance on hand:	$ 1,030.89
	$ 3,560.36

IN MEMORIAM: MAX CLEMENS RICHTER

The Garden's great benefactor, Max Clemens Richter, whose gift of his extensive library was the occasion for the construction of our Richter Memorial Library, died at Santa Barbara, California, on April 14, 1973 at the age of eighty-nine.

Mr. Richter was born in San Francisco on March 11, 1884. He received B.S. and M.S. degrees from the University of California in Berkeley.

From 1907 to 1927 he was involved in commercial honey production, and contributed articles to beekeeping periodicals and established apiaries in various parts of California as well as in Chile. From 1912 to 1914 he worked in Chile as an entomologist.

In 1933 he founded the Book Den in Santa Barbara, and was active as its manager until recent years. This was a congenial occupation for a man with a deep interest in rare books, and over the years Mr. Richter built up a personal library of books on cacti and succulents.

The collector of books in a specialized field cannot help but consider the eventual disposal of his library. He must decide whether the collection should be dispersed or kept together, and, if he makes the latter decision, in what institution his library will find the best use and value.

In 1960, Mr. Richter offered his library to the Garden, provided we, who had no separate library wing at the time, build a suitably large and fireproof building or wing. The building of the library was completed in late 1968, and Mr. Richter began to send us huge shipments of his valuable books during the following year.

On April 26, 1970 the Max Clemens Richter Memorial Library was dedicated and opened. It is not open to the general public, but has since been used by growing numbers of botanical students and researchers, much to Mr. Richter's satisfaction, since he felt that a library must be used to have any value or significance.

Mr. Richter leaves a son, Richard, of Santa Barbara, to whom the Garden and its members extend our deep sympathy.

Desert Trees and Shrubs

FLANNEL-BUSH
Fremontia californica Torr.
Sterculiaceae
Cacao Family

Fremontia californica is a small evergreen tree or large shrub, 3 to 6 meters (10 to 20 ft.) tall. The main stems are few and ascending, with rough, fissured, dark gray bark and hard, dark brown wood tinged with red. Densely matted on the thin foliage and stems are star-shaped hairs radiating from a common center. Twigs later become hairless. Leaves are shallowly trilobate and broadly ovate in shape. At the base they are subcordate or truncate and the apex is rounded or acute. They are thick, alternate in position, and measure 13 to 39 mm. in length. Leaf surface is deep green above with scattered hairs and yellowish below, thickly matted with stellate hairs. Flowering commences in May and extends throughout the summer. The rose-like flower is solitary and lacking in petals, but is showy because of the large, bright, lemon-yellow sepals. Nearly flat when open, the flower is from 3 to 7 cm. in diameter. Sepals are broadly ovate in shape and glandular at the base. Stamens number five, the filaments are short. Ovary is four or five celled. The fruit is an ovate capsule, 2 to 2.5 cm. long. It is dehiscent, splitting at the tip and there are

several seeds in each cell. Seeds are ovoid in shape and bony. They are reddish or yellowish - brown and covered with a short pubescence.

Flannel-bush is a species of the Chaparral Belt and is found in central Arizona, California, and Baja California, Mexico. In Arizona it is a relict species of the Pacific flora and is in discontinuous local colonies in Yavapai, Gila, northeastern Pinal, and Maricopa counties. Elevation ranges between 1070 and 1830 meters (3,500 to 6,000 ft.) in the Upper Sonoran to the Transition Zones. Some of the mountain ranges where populations exist are the Bradshaw, New River, Sierra Ancha, and Mazatzal mountains and on the slopes of Mt. Ord between Phoenix and Payson, Arizona. It is most frequently found on

Lovely yellow flowers of Flannel-bush open wide, are 1¼ to over 2½ in. wide.

The small leaves and stems have a flannel-like coating of matted hairs.

north exposures on dry, well-drained, rocky hillsides and in canyons.

Propagation is by means of softwood cuttings or seed. The fruit ripens in August and September and seed should be collected prior to dehiscence. Seed has long viability and it must be pretreated to break both seed coat and embryonic dormancy.

Fremontia californica has been utilized as an ornamental in California and to a very limited extent in Arizona. It thrives best at intermediate elevations, but has successfully been grown in low desert areas. This species can be grown in full sun exposure, but it must be planted in coarse, well-drained soils and be sparingly watered, particularly during summer months, to prevent loss from stem girdling. Flannel-bush is a shrub of great ornamental potential and has been used as such in Europe for over a hundred years, yet it is hardly known even to botanists in Arizona due to its remote and localized occurrences in the state.

REFERENCES:

Kearney & Peebles, Arizona Flora.
Little, E. L. Jr., Southwestern Trees.
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert.

——JHW

Arizona Cactus

WOVEN-SPINE PINEAPPLE
Echinocactus intertextus

Cactaceae

The specific name, **intertextus**, indicates that the plant's spine clusters are interwoven. This is, therefore, a nice easy plant to handle, without the hand-lacerating spines that are characteristic of many other cacti, especially ones with names like **ferox**, **horridus**, and **spinosissima**.

This three-to-six inch tall solitary plant, three-to-four inches in diameter, blends with the ground, rocks and grasses and is rather hard to locate because of its gray to purplish spines.

The spines are rigid and appressed to the plant. The sixteen to twenty radial spines, about ¼ to ¾ inch long, are usually white to gray, and rather bristle-like. The plant has four central spines, three of them ½ to ¾ inch long and turning upward, the remaining one very short and porrect.

Flowers arise from the apex of the plant and are light purple. They are about 1¼ inches long and wide. The 20 outer perianth segments are white-margined. The 20 to 25 inner segments are sharp-pointed. The pink pistil lobes and yellow stamens are most attractive and give off a delicate sweet odor.

Fruits are half-inch spheres that bear few scales. The black seeds escape through the fruit's basal pore. They are eaten by birds or carried away by ants. Collecting the seed is tedious — you may have to remove seeds one by one with a pair of tweezers from the crevices between the woven spines where they lodge after falling from the fruit.

Engelmann described this plant in 1856 as **Echinocactus intertextus**. In 1896 Coulter placed it in the Cerei as **Cereus pectinatus centralis**, and Schuman called it **Echinocereus pectinatus centralis** in 1898. To Rose, in 1909, it was **Echinocereus centralis**, and now Benson, in "Cacti of Arizona" 1969, has placed it in a new combination **Neolloydia erectocentra** var **intertexta**.

The plant is found over a large range extending from 20 miles east of Tucson to 50 miles east of El Paso, and southward into Chihuahua. It grows in rocky, grassy slopes at 2500-4000 ft. elevations.

Type locality: Not definitely cited.

Distribution: Southwest Texas, southeast Arizona, northern Mexico.

REFERENCES

Benson, Cacti of Arizona.
Britton & Rose, Cactaceae.
Earle, Cacti of the Southwest.

—WHE

This specimen of *E. intertextus* is six inches tall, four inches broad.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVII August-September, 1973 No. 7

REG-MANNING

SAGUAROLAND BULLETIN

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W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

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Cover: Profile view of Ernie Beahm's hybrid Epiphyllum "Fable," purple-red, 8″ wide and 5″ deep.

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Editor's Notes

Have you ever been in the quandary of having money at hand to do $20,000 worth of construction, yet finding that local contractors are too busy to submit bids for the job? Well, such is our dilemma at the Garden this summer. Drawings have been ready for weeks for our service road, Archer House road, and parking facilities for forty cars at the rear of the Webster Auditorium — but road contractors are so busy at present that they don't wish to give estimates until fall.

Just two bids have been received on laying a new two-inch galvanized water line to replace the ageing 1¼ inch line installed in 1933 through Papago Park. Now the City of Phoenix has laid a 11-inch waterline along McDowell Road, our north boundary. On being informed of this, our two bidders have lowered their bids for the job, in spite of the fact that the new routing will be four hundred feet longer than the old one! The reason is that the new routing will be through good digging soil, while the old one was through rock and caliche.

We will, of course, need additional bids before a contract is awarded, but the new line should be installed in early fall after our summer need for a continuous supply of "watering" water tapers off. The new line from McDowell Road will give us a tremendous increase in pressure and will enable us to open up our north portion of the Garden. Years ago we made up plans for roads, paths and beds in this area. The delay until now will make our old estimates of cost obsolete, but that can't be helped.

During August we constructed a metal storage building with concrete floor adjacent to the Herbarium for storage of our publications — Cacti of the Southwest, Cacti and Succulents and How to Grow Them, Nature Walk (Science Bulletin No. 4).

Our wholesale orders are increasing to such an extent that we are printing in larger volume in order to get a break on the printing costs that increase, predictably, every time we place an order.

You might be interested to know that we earn slightly over 50 percent on all our wholesaling, which absorbs about 70 percent of our printing. Our books, retailed at our Visitors' Center or through the mail, give us about 150 percent of our investment. That is standard marketing and mark-up procedure — when you print a book yourself it is more profitable than buying a printed book from a wholesaler. This has been an excellent income-producing venture for the Garden over the last ten years.

Some of the larger outlets for our publications are: Grand Canyon Fred Harvey stores, Saguaro National Monument, Organ Pipe Cactus N.M., Tonto Cliff Dwellings N.M., Casa Grande Ruins N.M., Abbey Press (Calif.), Milwaukee Botanical Garden, Denver Botanical Garden, and many bookstores through the United States.

May we repeat again: please keep us posted on your CHANGE OF ADDRESS. To return your Saguaroland Bulletin with the corrected address supplied by the Post Office costs up to 36½ cents per issue. If you mail us your new address the clerical cost here is nil and the Post Office does not

become the middleman exacting a heavy toll from us.

The National Science Foundation grant for the study of Agaves, under the direction of Dr. Gentry, has been extended for another year. The past year, ending on the last of August, had a few hundred dollars of unspent funds that will carry over. Work last year involved collecting plants, flowers, leaves and seeds on several expeditions through the southwest United States, Sonora, and Baja California by car, truck, and — burro.

Several of our staff members have had the privilege of accompanying Dr. Gentry on these trips, and it has been an excellent educational experience for them.

There is already a "waiting list" of people who have placed orders for the future publication of the monograph on Agaves which will be published after Dr. Gentry has consolidated his findings.

Our Herbarium has been most busy this past year, due in part to the hard work of Curator Harry Lehr who has just recently accessioned Herbarium Sheet No. 9000. (Over 1000 of the 9000 are specimens collected by Mr. Lehr.) There were around 2000 sheets when he was appointed Curator three years ago. Hard work, indeed. Our eleven herbarium cases were about filled so ten more large cases were installed in August. The Herbarium is certainly filling up, but we designed it so that we can easily expand its facilities with new additions when the need arises.

Marijuana useful? What do you know about hemp-hashish? Did you know its earliest use was in China over 5000 years ago when the fibers were made into thread and rope?

An excellent, readable resume of its history, by Director Richard E. Schultes of the Harvard Botanical Museum in **Natural History**, August-September 1973, published by the American Museum of Natural History.

Schultes writes of the cultivation of hemp for fibers, fabric, rope, medicine and food. His research on **Cannabis sativa** includes its present rank as star of the drug culture due to its hallucinogenic properties.

Seeds of the plant were carried into early civilizations for use in food and fiber. Hemp seed has been a favorite food for poultry and cagebirds. It was introduced into North America at Port Royal, Canada, in 1606. It was planted as a crop in Virginia in 1611 and brought again to this continent by the Pilgrims in 1632.

If you are not a subscriber to this magazine, you can find it in your local library and learn much more, including the fact that the word "assassin" is probably derived from the Arabic "hashashin," eater of hashish.

Mr. Manabu Saito, Japan born naturalist, spent several days last spring in the Garden sketching and painting cactus flowers, some of which appear in a timely, well-written article in the July 1973 issue of **Audubon.** It is "Who Will Save the Cacti?" by Elizabeth N. Layne, and you must read it if you are at all interested in saving endangered species of cacti.

Layne says, "Shockingly remiss in facing up to the crisis is the 3,000-member Cactus and Succulent Society of America, recently chastised by the new chairman of its conservation committee for having swept the conservation issue under the rug for the past forty years. The prevailing attitude has been that conservation is a good thing for everyone but the serious cactus collector."

I wish that more and more plant collectors would heed that admonition and cease collecting for collecting's sake in order, supposedly, to "save" species.

Our "Cactomaniacs" group has been criticized for not allowing its members to help themselves to plants while on a field trip, but they fully realize that plants do not belong away from their habitat, and that plants, even on public lands, belong to others.

Why do "collectors" go out with trailers and load them up with "loot?" It is disgustingly selfish, and moreover is so unfair to real collectors in distant places who put their own collections together by

trading, growing plants from seed, and hard work.

We have found and described new species of cacti in Arizona, but in citing their type locality and distribution we have had to be purposely vague so that "collectors" would not find them and clear them out completely. So many cacti are on the endangered list that clean-sweep "collecting" is criminal.

Do you know all about any one cactus? You've got a lively story awaiting you in the same issue of **Audubon** that tells about the birds, insects and animals associated with our saguaro. The article is "Life on a Tall Cactus" by Ruth Kirk, a chapter from her new book "Desert: The American Southwest" to be published this fall by Houghton Mifflin. This fascinating excerpt will explain many things you have noticed concerning the saguaro but did not know the **why** of. Read it and add to your knowledge of ecological facts about our Southwest desert.

Arizona Cactus

BISCUIT CACTUS
Coryphantha vivipara
Cactaceae

This small cactus, the size of a baseball, has a tremendously wide distribution: from southern Manitoba, west to central Alberta, then south through Kansas to northern Texas and into Arizona.

Coryphantha vivipara has very many varietal forms. Plants in the black soils of Manitoba are very dark, those in the alkaline soils of Alberta are gray, those in the "red rock country" of Sedona, Arizona are reddish, and those in southern Arizona have whitish spines where they are found growing in limestone. In all areas the plants blend into the soil by picking up the dominant minerals.

This natural camouflage has caused confusion among collectors and botanists. Dr. Lyman Benson has made it easier for cactophiles by setting up the following species and varieties in his book "The Cacti of Arizona": **Coryphantha vivipara, C. v. var bisbeeana, C. v.var Arizonica, C. v. var desertii, V. v. var alversonii,** and **C. v. var rosea.**

This solitary plant that puts out many offsets (**vivipara** implies that characteristic) will form mounds of 200 or more subglobose to cylindroid heads one to four inches tall and one to three inches in diameter. The stems are green and densely covered with spines that vary in color according to habitat. Central spines, three to ten per areole, are spreading, ½ to ¾ in. long, and are tipped with the dominant local color. Radial spines are also spreading and are straight with 12 to 40 per areole. This abundance of spines helps obscure the body of the plant.

Flowers are spectacular, one to two inches in diameter, light to dark pink, with ciliate or fringed outer petals and pointed inner petals. The lobes of the stigma are purple, and there are eight to a flower.

A 3"-tall specimen from Yavapai Co. with brownish-white spines.

Flowers remain open for several days at cool elevations.

The fruit is a naked green berry, slightly acrid to the taste, about ¾ to 1½ inches long and ¼ to ½ inch in diameter. Seeds are golden, ⅛ inch long.

This is an easy plant to grow. Roots are rather shallow and should be trimmed before transplanting. The transplanted plant needs some shade to help it establish new roots.

TYPE LOCALITY: Near the Mandan towns along the Missouri River in North Dakota.

DISTRIBUTION: Southern Manitoba, the Dakotas, through Kansas, Colorado, Texas and Arizona.

REFERENCES

Benson, Cacti of Arizona
Britton & Rose, The Cactaceae
Earle, Cacti of the Southwest

——WHE

Mexican Cactus

PITAYO or XOCONOCHTLE
Lemaireocereus stellatus
Cactaceae

By comparison this is one of the "low-growing" organ-pipe cacti, since it is less than ten feet tall, while most plants of this genus attain heights of thirty feet or more.

Like the majority of the Lemaireocerei, **L. stellatus** is a single-stemmed plant with many branched arms.

Lemaireocereus (for Dr. Charles Lemaire (1801-1871), named by Britton and Rose in 1909 in honor of that distinguished French cactologist and horticulturist) **stellatus** (star-shaped, for the arrangement of spines) was originally named **Cereus stellatus** when described by Pfeiffer in 1836. Martinus described it as **Cereus dyckii** in 1837, and Lemaire named it **Cereus tonelianus** in 1855. Riccobono in 1909 erected the genus Stenocactus to which he referred the species **stellatus**. This latter genus is still held valid by some botanists.

L. stellatus is an attractive organ-pipe with its 6 ft. to 10 ft. arms which are a rather glaucous pale blue-green. Each arm is five to six inches in diameter and has eight to twelve rounded ribs. These vertical ribs are crenate, with areoles in the depressions, one-half to one inch apart. The areoles are nearly naked of white felt and have a few central spines surrounded with ten to twelve radial spines slightly shorter than the centrals.

The starlike disposition of spines identify the species *stellatus*.

ASPECTS OF THE DESERT

Opuntia engelmannii, the most common desert prickly-pear, is a multi-use plant. Javelinas uproot it and eat the pads, tortoises reach up and eat young leaves and fruit, rodents feed off its seeds, and humans eat the fruit fresh or in jelly and use the split pads for poultices.

The small red flowers, one inch long and one inch wide, are diurnal. They are followed by spiny, red, globular, edible fruit that is 1¼ in. in diameter. The spines are deciduous, revealing a lovely round red fruit containing dull black pitted seeds. The fruit is sold in markets under the name of "joconostle" as well as under the general name for cactus fruit, "tuna".

Flowering is from May until late October, the flowers remaining open for several days.

This plant can be started from seed, but cuttings can also be made by sawing off an arm at the plant's base. The cut surfaces should be dusted with powdered sulphur and the cutting left to dry for a week or more before planting. After planting, do not water until roots begin to emerge, which may be a matter of thirty to forty days. Do not worry about the cutting dying due to the lack of watering. It has enough moisture in its body to last a year or more.

This plant grows very fast after it is rooted, so give it ample space to spread, since a normal specimen plant gets to be six or eight feet wide. **Lemaireocereus stellatus** will take temperatures down to 20 degrees F. Its meristem may "frostburn", but new growth will emerge through the burn when next spring comes.

This is a good "accent plant" for your cactus garden in the warmer states.

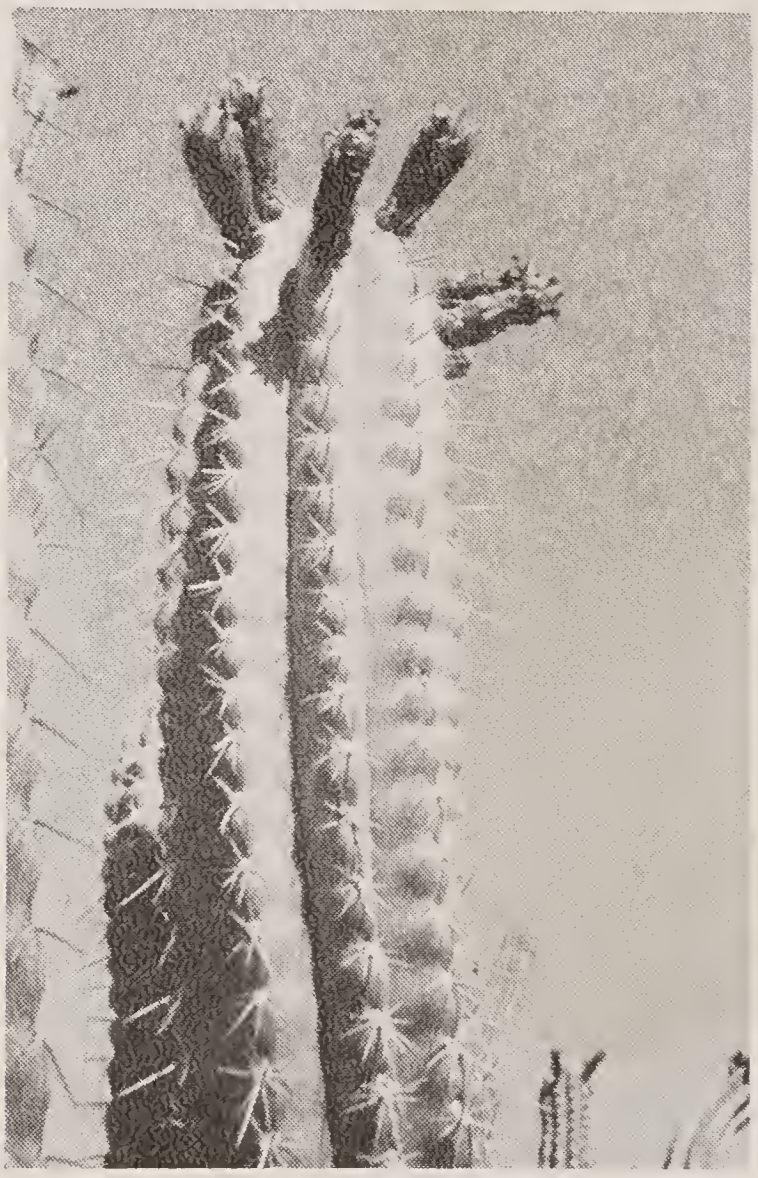
TYPE LOCALITY: Mexico.

DISTRIBUTION: Vera Cruz west through Tehuacan, on hillsides having good drainage.

REFERENCES

Bravo, Las Cactaceas de Mexico
Britton & Rose, The Cactaceae

——WHE



Flowering has just finished and the fruits are beginning to form.

A little cutting in 1938, this Pitayo is now ten ft. tall, seven ft. wide.

Arizona Wildflower

BEE BALM
Monarda menthaefolia

Labiatae
Mint Family

Yes, this resembles the garden plant called Bee Balm, except that the flowers are lavender instead of red. Both **Monarda didyma** and **M. menthaefolia** are mints, with the same typical square stem, and both have opposite leaves, so we have, for a change, a wildflower that is really easy to identify.

M. menthaefolia grows from Canada south to New Mexico and Arizona. In this state it is found from Apache County to Coconino County and south to Cochise and Pima Counties at elevations between 5000 and 8000 feet. It grows in small colonies in pine forests and in ditches along highways. Flowering time is late summer, though it can be found in bloom earlier at the lower limits of altitude.

Another name for Monarda is Horse Mint, which has nothing to do with horses. In this case "horse" is only a twist in the pronunciation of "coarse," and the leaves of Monarda are indeed coarse compared to those of other members of the Mint Family.

Mint Family plants are nearly all aromatic and useful, and some are handsome. For herb gardeners this family supplies mint, sage, lavender, oregano, thyme, rosemary, horehound and bergamot; and for beekeepers, an array of good honey plants.

M. menthaefolia is one to three feet tall and has a single cluster of flowers at the top of each stem. The lavender to purple

Large lavender flowers, long leaves and minty odor identify this Bee Balm.

flowers are another clue to the placement in the Mint family. They are relatively long two-lipped tubes, one to one and a half inches long. The upper lip is straight, the lower wide and decurved. Leaves and buds are softly hairy. Leaves are ovate to lanceolate, toothed, and two to four inches long, with a strong, minty odor.

REFERENCES

Kearney & Peebles, Arizona Flora
Rickett, Wild Flowers of the U. S., Vol. IV.

—LD

A MINIATURIZED PLANT PRESS AND HERBARIUM

by VINCENT D. ROTH

Reprinted from THE AMERICAN BIOLOGY TEACHER, Vol. 34, No. 12, December, 1972

The object of a personal herbarium is to provide a visual aid to the identification of plants. The large number of plant species in any locality often precludes immediate identification from memory, and the technical descriptions are usually beyond the ability of most casual workers. Consequently, the most practical place for the herbarium is in the field with the collector or at least nearby, in his vehicle.

What I call a miniherbarium has this portability. It is useful to ecology students and their teachers; to professionals in many fields, such as entomology, forestry, range management, and ecology; to farm advisers and county agents; to summer-camp and 4-H leaders; and to hobbyists.

Workers in large herbaria may find that a reference collection of "mini" size will save wear and tear on the larger, standard herbarium sheets. For example, the plant collection of the American Museum of Natural History's Southwestern Research Station, at Portal, Ariz., has had such heavy use that protective measures had to be taken. Wear has been reduced by enclosing each standard herbarium sheet in a protective plastic bag, but even this is not sufficient. The large herbarium will be retained, but the miniherbarium will be used for most identifications.

There are other advantages to the miniherbarium. Besides being portable, it is a space-saver at home or in the office. It is inexpensive: the cost of a card file with 300 species is slightly more than 1 cent a plant. The small amount of plant material needed for each specimen results in the conservation of wildflowers. Because the samples are small, the specimens dry more rapidly. The press is small enough to be carried in a pocket or purse and is readily available at any time. (Two or more are useful for long trips.)

Specifications

The plant-press frame consists of two 8-by-13-cm (3⅛-by-5⅛-inch) pieces of Masonite pegboard. The holes provide ventilation; however, solid Masonite works well in arid southern Arizona and may be satisfactory elsewhere. The frame overlaps the edges of the 7.5-by-12.5-cm (3 by-5-inch) cards and blotters and so prevents them from being bent by the rubber bands when they are not exactly lined up. Desk blotters or, better yet, thicker herbarium blotters, cut into 7.5-by-12.5-cm (3-by-5-inch) pieces, are adequate for pressing plants. Corrugated cardboard spacers are not necessary, but with thick plants two blotters are sometimes advisable, especially if thin blotters are used.

Miniherbarium and minipress are convenient to use in the field.

Strong rubber bands maintain the pressure on the plants, but it is a good idea to give the frame a tight squeeze by hand before applying the bands.

After the plant is pressed and dried it is attached to a blank 7.5-by-12.5-cm card. (This is the ordinary 3-by-5-inch file card.) Transparent tape is used; or clear Con-Tact paper (suggested by Mrs. John

Payne, of Maitland, Fla.) for more permanency. It is best to label the card, using indelible black ink, before applying the Con-Tact paper.

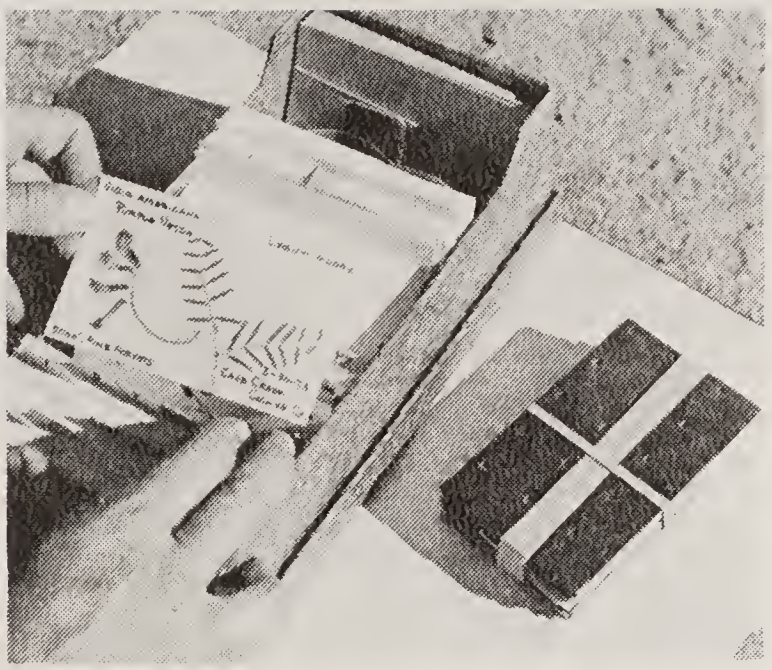
The plant samples can be taped fresh in the field to 7.5-by-12.5-cm scratch paper or cards and labeled before they are placed in the plant press. This makes a cheaper and poorer-looking card but one that is adequate for classes.

The data on the front of the card include the scientific name of the plant in the upper left corner and the common name immediately below. The family name is placed in the upper right corner, to simplify filing. On the right side, below the family name, the locality and the date of collection are indicated. In the lower right corner is the page number of the local floral list wherein the species is described. The back of the card can be used for additional notes, such as the plant's habitus, dates of bloom and seeding, and detailed descriptions of the floral parts. It is useful to place a sample of the flower or floret in a vial of alcohol for later study of the parts; several specimens can be placed in a vial together and separated later.

Arranging the Miniherbarium

The cards are placed in a standard 7-5-by-12.5-cm file. The miniherbarium can be arranged in many ways, according to the worker's preference: by families, general, and species, arranged alphabetically, for the botanist; by color of flowers, for the hobbyist; by groups, such as trees, shrubs, grasses, parasites, ferns, spring flowers, fall flowers; or geographically. In large families the locating of a specimen is simplified by arranging the species possessing any groups of characters. For instance, the Cruciferae can easily be divided into (i) white, yellow, or other colored flower groups or (ii) globular seed pods vs. elongated seed pods.

There are various methods of reducing the size of the collection and keeping it portable. The common species or those commonly recognized can be removed to a special file in the office or at home. When



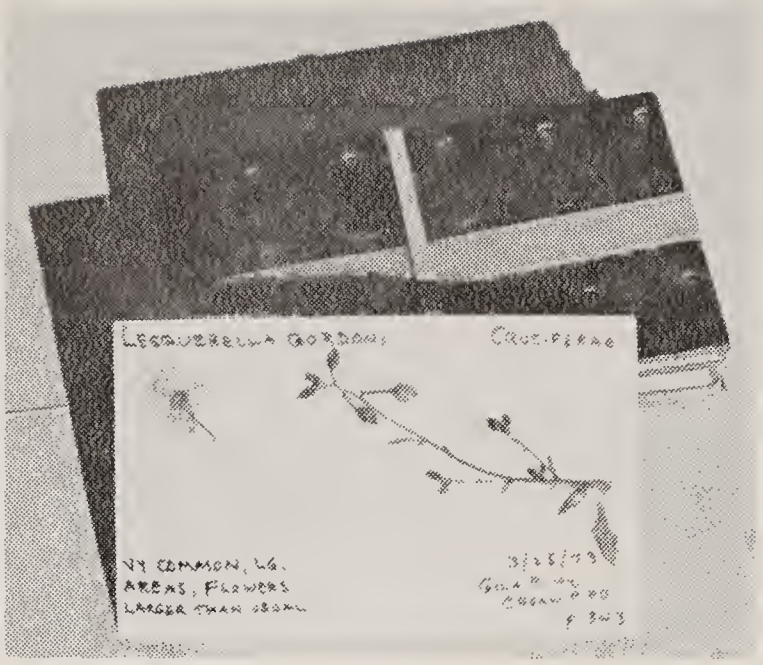
Close-up of miniherbarium and minipress.

flower parts or leaves are bulky or too large they can be split in half; or sketches of the parts can be substituted, for the purpose of identification. Keys to species of easily identified genera, such as **Yucca, Penstemon, Dalea,** and **Astragalus,** or those of cacti, pines, oaks, and other plants can be placed on cards to reduce the number of plant cards. For instance, the two columbines in the Chiricahua Mountains of Arizona are simply separated on one card with the words "yellow flowers: **chrysanthus;** reddish flowers: **triternata.**" No flower is necessary for this easily recognized genus.

If the plants are arranged according to families, genera, and species, index cards can be eliminated or reduced to a few for the most important families or groupings.

The miniherbarium may be inadequate for some workers because of its small size, but it can easily be enlarged and adapted to 10-by-15-cm (4-by-6-inch) cards or even to the extralarge 12.5-by-20.5-cm (5-by-8-inch) cards. After all, even the standard herbarium sheet is inadequate for many large plants — such as shrubs and trees.

The author is resident director, since 1962, of the Southwestern Research Station of the American Museum of Natural History, Portal, Ariz. 85632, and research



Completed miniherbarium sheet.

associate, Dept. of Biological Sciences, University of Arizona, Tucson. He obtained his B.S. and M.S. degrees, in entomology, from Oregon State University in 1950-51. Spiders and insects are his main professional interests, but he has also published papers on the feeding habits of jays and the combat behavior of snakes. Roth enjoys exploring the deserts of the southwestern U.S., Sonora, and Baja California. "One such trip," he says, "turned up the long-lost Ditmar's horned lizard, the type locality of which had not been precisely known since 1905."

Note from a user of this minipress: For the past year I've been carrying one of these pocket-sized presses on wildflower hikes, and I can assure Bulletin readers that there's nothing to match it for convenience and just plain fun.

If you've been pressing to-be-identified wildflowers in your field guide or an old magazine, you know how awkward it is to keep notes of where the flower was picked, and then when you get home and finally make the identification, you're faced with the problem of what to do with the flowers and with your notes. (If you don't do anything, you'll keep carrying around a book full of unidentified dried flowers.)

Making your miniherbarium is such the identification job any more. The job of writing up a card and covering it with Con-Tact is just a matter of a minute or so, and since this is going to be your very own herbarium you can write whatever you want to help you remember any particular plant. (One of my cards says: "This is the little white daisy — REMEMBER IT!) A felt-tip pen is handy, but the ink will run if the card gets wet.

The permanence of Con-Tact-covered cards is no drawback if you need to make a correction. Scotch Brand Magic Tape is what I've found useful — you can write on it. To correct a word, cut a strip of white paper the size of your "wrong guess" and slightly narrower than the tape, and tape it down over your mistake. Then write the correct word on the tape, and cover it with another piece of tape when the ink dries. I realize a very neat-handed person could just write the correction on the less-than-half-inch slip of paper and position it accurately, etc., etc. I've tried it. The way suggested above is a lot easier.

If you can't or don't want to make a minipress you can order one from BioQuipt Products Co., P.O. Box 61, Santa Monica, California 90406. The price is $2.00 each, postpaid.

—LD

With the arrival of fall comes the start of the Garden's season of meetings, classes and lectures. You'll receive a copy of the Calendar of Activities with your next issue of the Bulletin. Meanwhile, here are two early events you may want to attend.

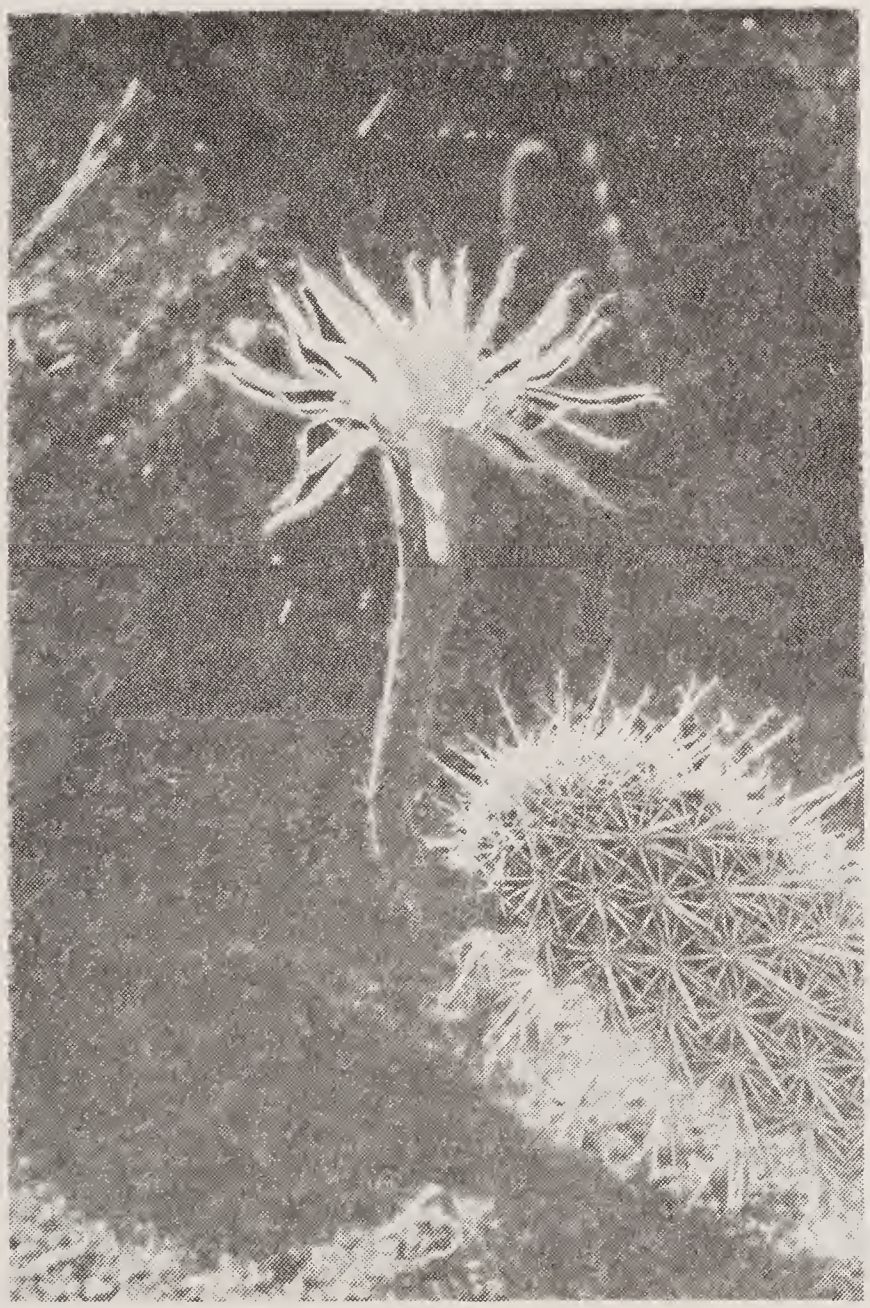
Tuesday, October 2nd. Cactomaniacs' Pot Luck Supper at 6:30 p.m. Director Earle will repeat his talk on the Echinocerei given at the Cactus and Succulent Convention.

Saturday, October 6th. Nature Field Trip to Bartlett Lake. Meet at the Visitors' Building at 8:30 a.m.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVII October, 1973 No. 8



REG MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Volume XXVII | October, 1973 | No. 8

Arizona Cactus and Native Flora Society

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Cover: Four-inch-wide flower of *Machaerocereus eruca*

Desert Botanical Garden of Arizona

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Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

October ushers in FALL which is so refreshing to all of us at the Garden who have had to withstand the heat of the summer which began in early May. We had 4.28 inches of rain up to last of May but only 1.02 since. August usually brings monsoons but failed us this summer, yet the Garden looks green and we have had continuously blooming shrubs thanks to our horticulturist Rodney Engard and his assistants who have kept the plants watered and set the sprinklers running after the sun goes down each evening.

Several of our summer help have returned to college, Lyle McGill who has been working on his master's degree will be with us until he returns to school for his doctorate. Jean Wiehe, our secretary, had to leave for South Dakota last June so we now have Claudia Maule who is learning our procedures and looking after the office.

Don Shelstad has been busy making repairs around the buildings when not busy in the store. His good wife Ann Shelstad has, along with her sales duties, packaged several thousand packages of cacti and wildflower seed that will be sold over the counter. She has just returned from three weeks in Bangkok visiting her daughter and granddaughter.

Dr. Howard Gentry is quite busy with the N.S.F. grant for the monograph on the Agaves. Bonnie Foster is his secretary, assisted by Jane Ann Sauck this past summer. Dr. Gentry will have a report on this interesting grant in a later issue of the Bulletin.

Curator of the Herbarium Harry Lehr and Dr. Gentry are most happy to with additional ten herbarium cases that we installed this past summer, with, we thought, enough space for herbarium sheets for several more years. At the rate they're going, however, we'll have to revise the estimate. The Herbarium has been visited this summer by many researchers interested in Agaves and Jojoba. VOLUNTEERS Dorothy Reiff, Lela Turner, Margaret Jenkins, Paul & Ruby Neumann, Mildred Hunt, Peg Gill, Lillian Diven and Elizabeth Fritz have been busy at the Garden thru the heat of the summer. Volunteers Gretchen Boland, Carl and Eleanor Groschke, Helen Friedrichs and others have been traveling this summer and by their postal cards state they will be with us in the fall. This causes me to ask-Why don't you volunteer for some of the Garden's activities? We can always use your talents and you'll enjoy the activity. Please phone the Garden at 947-2800 and give us your help.

A PROGRAM OF ACTIVITIES list for 1973-74 at the Garden is enclosed with this Bulletin for your information as to when we will be having Lectures, Classes, Shows and Field Trips. Hang it up in a conspicuous place and as a member feel free

to participate in any of the listed activities. Bring a friend, too. See you later!

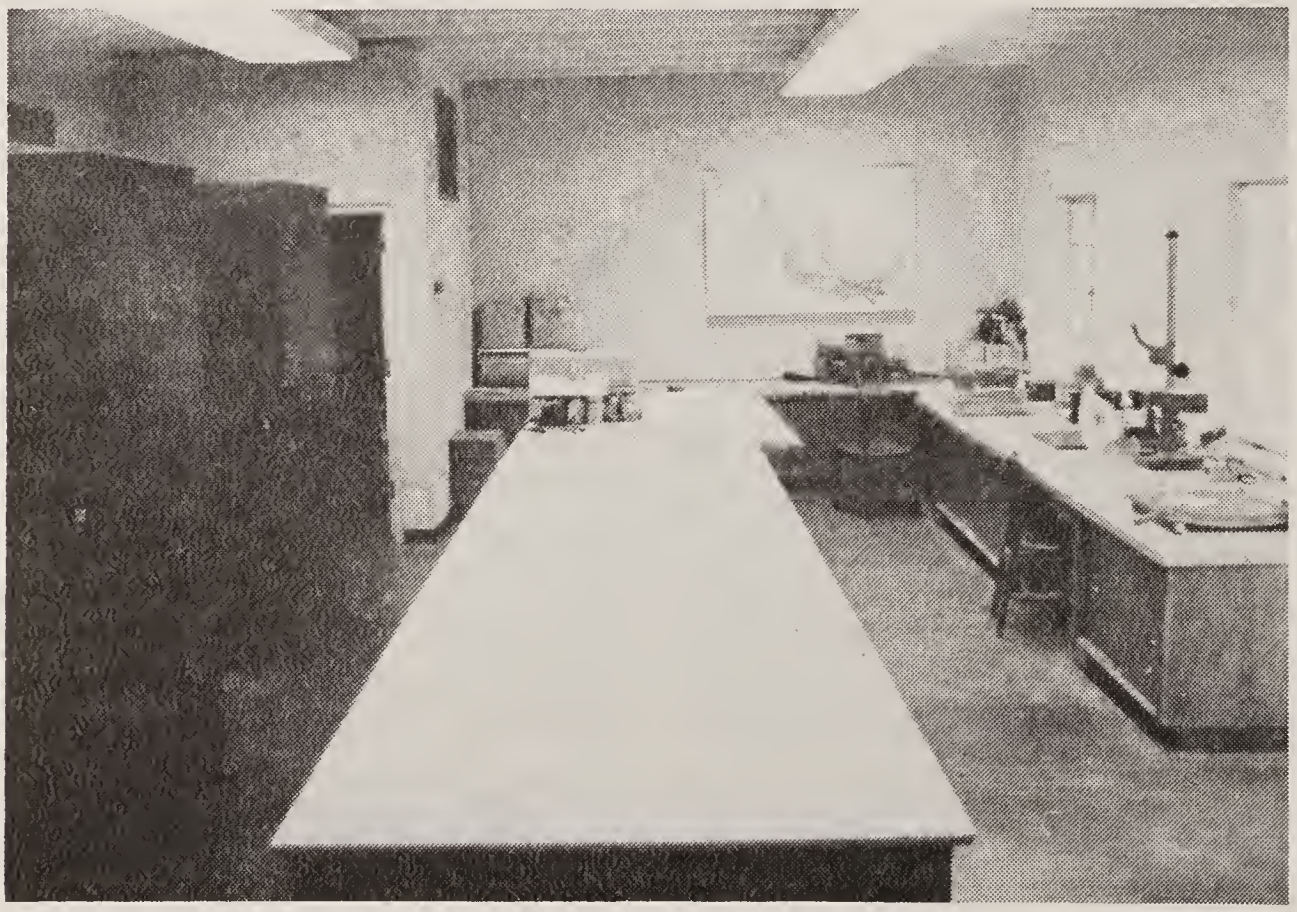
FAKE GREEN CAUSES RED FACED — Los Angeles County spent over $50,000 to plant plastic greenery along roadsides in San Pablo, Cal., only to find that the ultraviolet light rapidly faded the "plantings". They were torn out and replaced with real plants. As they said ruefully, "Artificial plants are not durable enough."

Scottsdale, Ariz. passed on an ordinance that artificial plants and grass could not be used along city streets and buildings. A few days later a local taxpayer called the city's attention to the fact that the new plantings at the City Civic Center were artificial. Real plants were quickly installed.

ORGANIC FOOD COSTLY. A recent survey by the U.S. Department of Agriculture finds that organic foods tend to command a higher price on the market. With food prices sky-rocketing nationwide, buyers of organically raised food are advised to take a good look at what they are purchasing.

According to the Dept. of Agriculture, a market-basket of 29 standard brands bought in the supermarket costs $11.00. A basket of the same number of organic-labeled counterparts cost $17.80 in a natural foods store, $20.30 in a supermarket's organic section and $21.90 in a health food store. The same report advised the food labeled "organic" is not likely to contain more vitamins or other benefits than similar food not labeled "organic".

LIGHTNING — Some three hundred people are killed each year by lightning. Many are struck after taking refuge under a tree despite many warnings against such a practice.



Inside the Herbarium. Between the windows at the right is the very modern binocular dissecting microscope, an essential research tool.

If you are caught in a thunderstorm, stay away from trees and avoid metal, bodies of water and high ground.

Once in a safe place during a thunderstorm you can watch where the lightning strikes and verify the accuracy of the two studies made on the subject. The National Shade Tree Conference has discovered that oak trees are more susceptible to lightning bolts, followed by elms, ashes and maples.

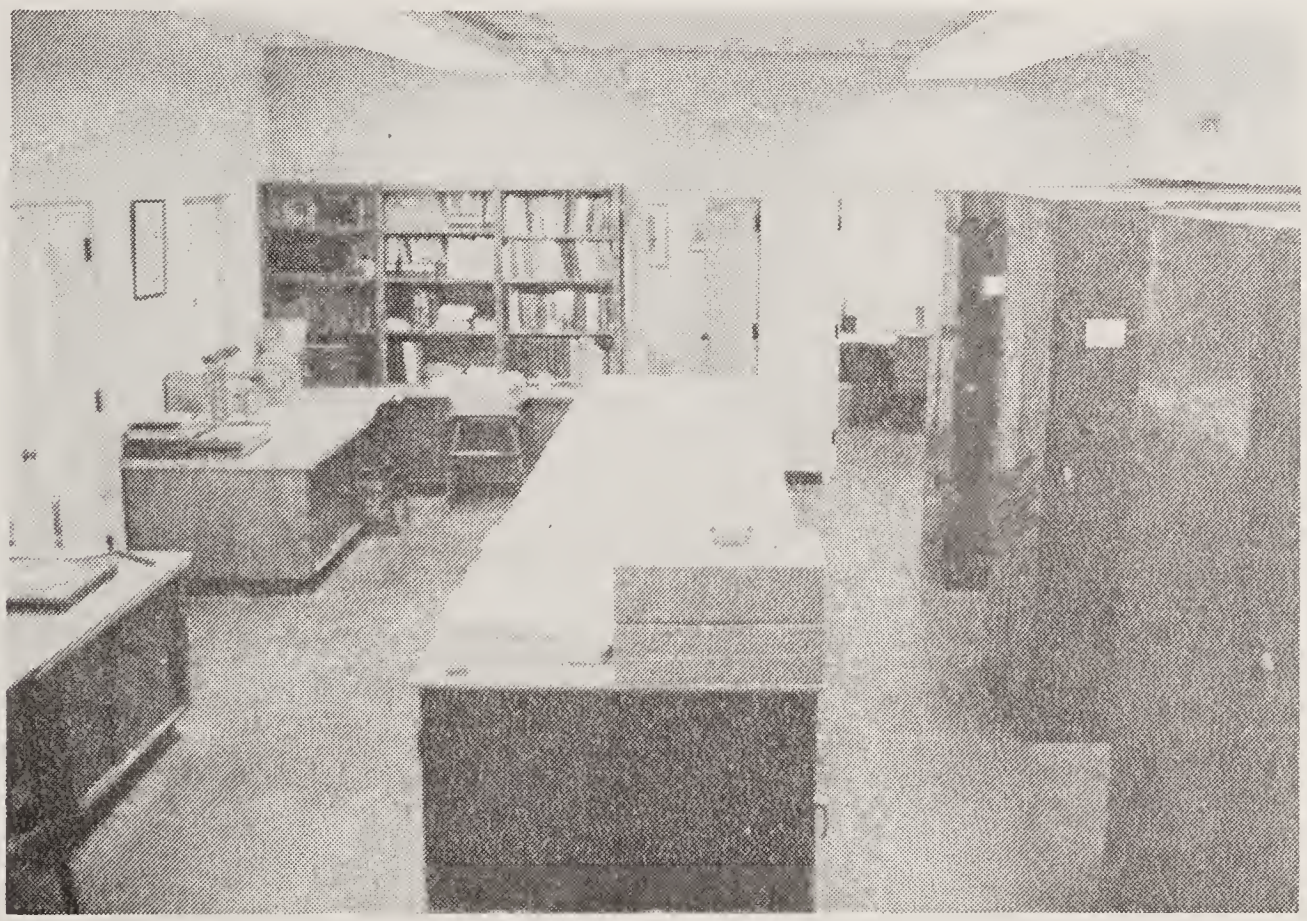
Observations by the Bartlett Tree Expert Co. have produced a slightly different list: oaks, elms, pines, willows, poplars, spruces and maples in that order. Whatever the species, the tallest trees and those standing alone are most likely to be struck.

In our desert most of our trees are 'rounded-off' and do not lend themselves as a conductor. Years ago many farm hands taking shelter from storms were struck as they stood under the tall poplars that used to line the canals and ditches.

Our greatest danger is on the golf courses which are wide open. The electric charge may seek a conductor to the ground and find it in the upswing of a golfer holding a metal golf club.

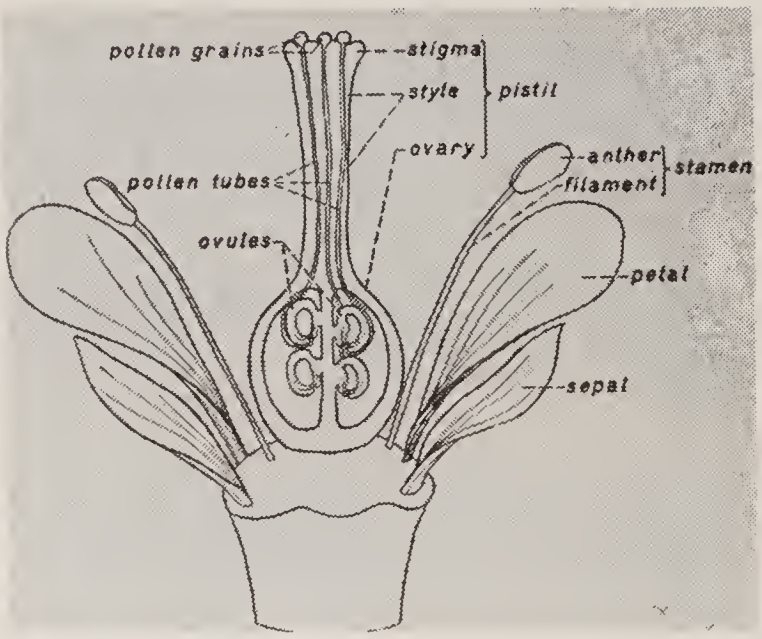
Yes, lightning will strike in the same place more than twice — I've seen it happen.

TAXONOMISTS' CURIOSITY MAY HELP SAVE THE WORLD is an interesting story by Howard Ensign Evans in the Sept, 1973 issue of "Smithsonian" which you should read to better understand a taxonomist's career and learn how his ability to properly catalogue and describe living things may help save the world. You will find the magazine in your local libraries and at the Garden. You will discover that classifying life on this world is more than chasing butterflies.



Looking toward Dr. Gentry's and Mr. Lehr's offices. Some of the new herbarium cases can be seen at the right.

WHY A FLOWER?



Drawing of a generalized flower, showing all principal parts.

Why do some plants have showy flowers when others don't? The answer is found in the explanation that the flower is the reproductive organ of the plant and seed production depends on the proper transfer of pollen. In the case of self-pollinating plants, flower parts are arranged so that the pollen can fall from the anthers down into the ovule. Many self-pollinating plants have unusual forms, assuring transfer of pollen from one part of the flower to the other. Form, rather than color, is the important characteristic of these plants.

The majority of flowering plants, however, require cross-pollination (each flower pollinated from a different plant). This poses a transportation problem when the plant is rooted firmly in one place. But this has been solved in nature in a variety of ways. Where pollen grains are tiny and light the wind serves as one means of dispersal. Many plants, including trees such as oaks and hickories and most of the grasses, are wind-pollinated. These plants possess very dull and inconspicuous flowers, perhaps because the wind is not discriminating in its selection of the pollen it will pick up so there is no advantage for the plant producing colorful flowers.

In the less common species, such as dogwood or the wild violet, the individuals are often scattered far apart and would not be pollinated if they had to rely on the wind, since the grains would be lost before their flight took them to another distant plant.

Here evolution has developed showy colorful flowers which attract various birds and insects who in turn act as carriers of the pollen grains. Various colors, shapes and odors of these flowers suggest an intricate and complex relationship between the plant and its animal pollinator.

The common bull thistle, for example, (**Circium vulgare**) has a special place for the butterfly to sit so it can comfortably sip nectar, picking up some pollen as it does. Plants in the milkweed family (Aesclepiadaceae) use colors and nectaries especially designed to attract bees. Their pollen is found in small sacs with specially shaped slots to catch the leg of a visiting bee. The large yellow evening primrose (**Oenothera missouriensis**) blooms at night on the open glades and, as you might guess, it is pollinated by a moth.

The color of the flower is also an important clue since different birds and insects vary in their ability to see colors. Bright red flowers are frequently pollinated by hummingbirds — which are attracted to that color — rather than insects, whose vision does not include the red end of the spectrum. To an insect's vision the bright red flowers of the trumpet vine (**Campsis radicans**) blend in with the green background, but they are quite conspicuous to a hummingbird.

Have you then noticed that our day-flowering brilliant cacti flowers attract bees, flies and hummingbirds? Our night flowering cacti all have white flowers as white attracts moths, bats and other night insects who cannot easily detect colors that blend into the locality.

ASPECTS OF THE DESERT

The Joshua Tree, **Yucca brevifolia**, is the Saguaro's only rival as the desert's giant, and the two occupy separate territories except for one "neutral ground" in Arizona's southern Mohave County. It can reach thirty feet in height and three-hundred-year-old plants aren't uncommon.

Mexican Cactus

CREEPING DEVIL
CHIRINOLE
Machaerocereus eruca
Cactaceae

Machaerocereus (dagger-like spines) **eruca** (caterpillar) most certainly describes this vicious and, to some persons, repulsive plant. It grows in masses on slightly elevated mounds made by the wind blowing debris and sand among its stems—this serves as a soil binder preventing soil erosion.

This unusual cactus is in the cereus group and flowers infrequently at night. Pack animals shy away from the plants due to the dagger-shaped spines which can penetrate their hooves and legs.

M. eruca is a prostrate plant with branches three to ten feet long that root on the underside of the branch or stem allowing the branch to anchor itself in the soil. As it grows, the head of the branch raises itself up in the air about nine to 12 inches then will settle to the ground again during a lull in its growing period. During the progress of growth the rear or older portion of the stem continues to decay and dry off. The stems will criss-cross over each other, clearing several feet before they can fall and again make contact with the soil into which they will send their roots. Plants will also progress in the same manner when they approach a large rock—they appear to 'crawl' over it. Growth is four to sixteen inches a year whereas the decaying or dying portion may be two to ten inches a year.

Plants that begin as seedlings will send out branches that creep over the surface of the ground in a pattern similar to the spokes of a wheel. (Plants propagated by cuttings rarely branch.)

The branches are three to four inches in diameter with white dagger-like central spines two inches in length and deflexed. There are about twenty terete spines, pale grey, from each areole. Areoles are about an inch apart along the twelve ribs of the prostrate branch. Flowers were originally reported to be yellow, but they are white, opening about 9 p.m. and closing at 5 a.m. They are eight inches long, rotate, with a naked limb but many spines on the ovary. Fruit is one and a quarter inches long, spiny, with black seeds.

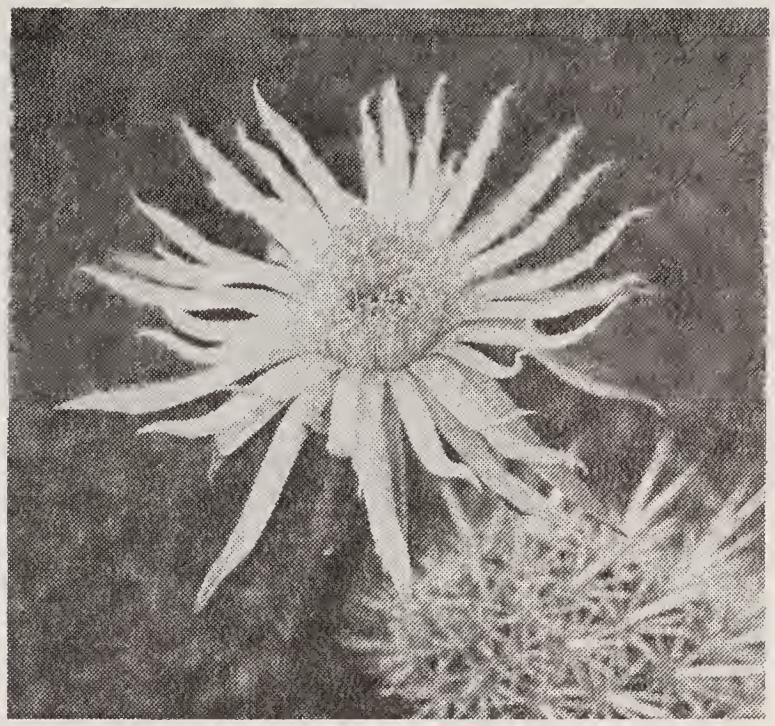
The plant was first found on Magdalena

Photographed in their native habitat along the coast of Baja California, these Creeping Devils look more like writhing sea mammals than plants.

Island off the coast of Lower California, Mexico and then in larger patches on the west coast from Santo Domingo southward in sandy areas and down to high tide mark on the beaches.

The plant was described by Brandegee in 1889 as **Cereus eruca** in Proceedings of the California Academy. In 1909 Britton & Rose, feeling that the plant's fruits were nearer the genus **Lemaireocereus** named the plant **Lemaireocereus eruca**. Then in 1921 they set up the new genus **Machaerocereus** for the plant.

This is an easy to grow plant but you will have to give it lots of heat and very little water. In its native habitat it lives off the fog as it seldom rains there. Give it lots of room to expand. Small cuttings can be placed on the ground where they will then root. Often you can get them started in a low wide fern pot, but do not pile up the dirt around them as they will then rot. Do not expect them to flower for you for several years. This curiosity is a rare addition to your collection.



M. eruca flowers are white, with pale pink to lavender shading underneath.

Type locality—Magdalena Island, Baja California

Distribution—Lower California, Mexico

REFERENCES:

H. Bravo, Las Cactaceas de Mexico
Britton & Rose, The Cactaceae

——WHE

Arizona Wildflower

LEWISIA BRACHYCALYX

Portulacaceae
Portulaca Family

The best-known species of this genus is **L. rediviva**, Bitterroot, the state flower of Montana. It, too, grows in Arizona, but has been found only at Grand Canyon, while **L. brachycalyx** grows in all the counties of northern and eastern Arizona. The genus was named by Dr. Engelmann for Capt. Meriwether Lewis of the Lewis and Clark Expedition (1806-7).

L. brachycalyx is a pretty sight when you come across it in bloom, rising only an inch or two above the winter blackened pine needles that have fallen from tall surrounding ponderosas, or half-hidden by drifts of dead oak leaves. Not quite flat on the ground is a rosette of narrow, rather thick succulent leaves, each about two inches long. On each stem, which is rarely more than two inches high, is a single white or pink-tinged flower, an inch to an inch and a half across.

This is a reasonably common plant, but almost "unspottable" when not in flower, partly because it is a ground-hugger and partly because individual plants are scattered or sparsely grouped. In spring, however, the white flower shines brightly in the shade and catches the eye quite easily. Your first thought may be "Strawberries in bloom!" though a closer look will show your error.

In common with other members of the

Portulaca family (including the familiar garden portulaca) this plant has succulent leaves. From a long, thick root topped with a short, thick caudex come several one to two inch stems. Each stem bears a solitary flower having five to nine petals that are one-half to one inch long. (Bitterroot flowers have twelve petals.)

As the leaves dry they develop noticeable transverse wrinkles.

L. brachycalyx is found at elevations of from 5000 to 8000 ft. among oaks, junipers and pines on sandy or gravelly soil. Blossoming is from March to May. This picture was taken at Pine in Coconino County, just under the Mogollon Rim at an elevation of 5400 ft.

Distribution: Southern Utah, Arizona, southern California. In Arizona Apache, Navajo, Coconino, Gila and Yavapai counties.

REFERENCES

Abrams, Illustrated Flora of the Pacific States

Kearney & Peebles, Arizona Flora.

——LD

Arizona Cactus

GOLFBALL PINCUSHION
Mammillaria lasiacantha
Cactaceae

The common name of this unassuming yet most attractive miniature ball-like cactus really describes it. When it is in its native surroundings a person is most likely to pass it up as just a round quartz rock.

The common name of this unassuming yet most attractive miniature ball-like really describes it. When it is in its native surroundings a person is most likely to pass it up as just a round quartz rock.

Mammillaria lasiacantha (shaggy- or hairy-spined) was found by Dr. G. Engelmann who described it in 1856 in "Proceedings of American Academy". Later he set up some varietal forms as **M. lasiacantha minor, M. lasiacantha**

denudata in 1859. Kuntze in 1891 described the plant as **Cactus lasiacanthus** and Coulter named it **Cactus lasiacanthus denudatus** in 1894. Quehl in 1909 named it **Mammillaria lasiacantha denudata**, Britton & Rose in 1923 referred it to **Neomammillaria lasiacantha** and later in 1923 thought it should be **Neomammillaria lasiacantha denudata**. Despite all its many synonyms the name **Mammillaria lasiacantha** has been in general use for over 100 years.

This small globose plant is three-quarters to one and half inches wide and one half to one inch in height and has the tendency to hug the ground. The gray-white spines obscure the stem and the areoles are densely packed with 20-50 one-eighth-inch-long acicular, somewhat glabrous, and appressed spines. Flowers are rotate, one-half inch in diameter. Petals are white with a red midstripe. Fruits are red, clavate, three-quarter of an inch long and three-sixteenths wide, quite edible. They are referred to by the Indians as 'chilitos', though they are sweet, not chili-hot. Seeds are less than one-sixteenth of inch long, brown in color, and pitted.

Mammillaria lasiacantha has a large range in the Chihuahuan desert and grasslands at three to four thousand feet elevation. It is a solitary plant yet large groups of the plants can be found in grasslands and sometimes in the rocky desert. Often the plant will grow in low clusters of 2 to 5 plants. The plant has not been recorded as found in Arizona since 1953 due to its exploitation by collectors and cactus retailers. It used to be found on the Santa Cruz-Cochise county line near the Mexican boundary. Undoubtedly it will again be found by some plant explorer in south central Arizona.

Plants collected in Texas and Mexico are being sold by dealers and are very easy to grow as long as they have good drainage, are watered lightly, and are partially hidden from our desert sun. They grow to a good size in many eastern cactus collectors gardens. This is a dainty plant when in flower and fruit.

Type locality—On the Pecos River, western Texas.

Distribution—West Texas, south central New Mexico, southeast Arizona and Chihuaha, Mexico.

REFERENCES

L. Benson—The Cacti of Arizona
W. H. Earle—Cacti of the Southwest

——WHE

Two "golfballs", one inch high, with bright red fruits about 3/8 in. long.

White spines and globular shape make this one of the most popular "mams".

Our Visitors Center and Building has within it an interesting Bookstore and Gift shop, but some of our Members may not be aware of its contents.

Do you know what type of stock the Book Store retails? You will be surprised to know that the finest selection of books relative to the desert and its life are carried on its shelves—eighty-five different titles by actual count.

Favorite sellers as gifts are Cactus seedlings, seeds and plants; 26 different note papers along with five tablets and sheets; pinyon pine and juniper incense and burners; 120 different colorful postcards; 16 sleeves of Kodachrome slides; 7 different boxes of minerals, geodes and desert roses.

Scorpion and tarantula plastic paper weights attract attention; cholla wood lamps, totem poles, ashtrays, lamp kits and bags of decorative cholla sticks make good souvenirs; desert wind bells; jewelry, charms, pins, rings; bolo ties of minerals and scorpions; Cactus candy, jelly, syrup from prickly pears; camera film, hand woven hot pads and placemats; preserved flowers in frames and oolitic sand for flower preserving; hand-costumed Apache, Navajo, Hopi and Zuni dolls; maps of Lost Mines and Ghost Towns, soft drinks, etc.

Sales of the above items ran slightly over $90,000 last year. This surely helps pay our increasing salaries. The most interesting feature of our Shop is that practically all of its items are made in Arizona.

The Gift Shop is a tremendous spot to browse for hard-to-find gifts, so remember Christmas is only about twelve weeks away. Help your Garden by doing some of your shopping here.

1973-74 Program of Activities
DESERT BOTANICAL GARDEN
IN PAPAGO PARK, PHOENIX, ARIZONA

(Enter Garden from 5800 E. Van Buren or 6400 E. McDowell)

DESERT BOTANICAL GARDEN is open daily 9 A.M. - 5 P.M., including weekends and all holidays. Voluntary admissions support the Garden.

ILLUSTRATED LECTURES using colored slides taken by the Staff members are given each Thursday at 3 P.M. in the Webster Auditorium.

CACTOMANIACS is an informal group that meets on the first Tuesday of each month to hear talks on the desert and related subjects and enjoy the Garden. You, too, are welcome.

CLASSES in Identification, Propagation and Use of Desert Plants are given Wednesdays at 3 P.M. from the Fall into the Spring. No registration fee for Members. Fee for non-members is $5.

CLASSES in Flower Preservation will be given March 30th to April 30th. (Saturdays 9-11; Tuesday 9-11 & 1-3.) Enrollment it $30 for Members, $35 for non-members. Get your reservations in early. All classes are held in the Webster Auditorium.

OCTOBER

Tues.	2nd	CACTOMANIACS—Potluck Supper "Echinocerei"—W. H. Earle	6:30 P.M.
Sat.	6th	FIELD TRIP—Bartlett Dam	8:30 A.M.

NOVEMBER

Thurs.	1st	LECTURE—Arizona Cacti in Flower	3:00 P.M.
Tues.	6th	CACTOMANIACS "Metal Containers"—Fred Baselt	8:00 P.M.
Wed.	7th	CLASS—Desert Plants	3:00 P.M.
Thurs.	8th	LECTURE—Arizona Wildflowers	3:00 P.M.
Sat.	10th	FIELD TRIP—Apache Trail	8:30 A.M.
Wed.	14th	CLASS—Succulent Plants	3:00 P.M.
Thurs.	15th	LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Wed.	21st	CLASS—Culture of Succulent Plants	3:00 P.M.
Thurs.	22nd	LECTURE—Arizona Birds & Animals	3:00 P.M.
Wed.	28th	CLASS—Desert Trees & Shrubs	3:00 P.M.
Thurs.	29th	LECTURE—Arizona Scenics	3:00 P.M.

DECEMBER

Tues.	4th	CACTOMANIACS "Know your Soil"—Dr. Ivan J. Shields	8:00 P.M.
Wed.	5th	CLASS—Culture of Trees & Shrubs	3:00 P.M.
Thurs.	6th	LECTURE—Collecting Plants in Mexico	3:00 P.M.
Sat.	8th	FIELD TRIP—Canyon Lake	8:30 A.M.
Wed.	12th	CLASS DESERT TRIP—Pinnacle Peak	8:30 A.M.
Thurs.	13th	LECTURE—Wildflowers of W. Australia	3:00 P.M.
Thurs.	20th	LECTURE—Arizona Cacti in Flower	3:00 P.M.
Thurs.	27th	LECTURE—Arizona Wildflowers	3:00 P.M.

JANUARY

Thurs.	3rd	LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Sat.	5th	FIELD TRIP—Seven Springs	8:30 A.M.
Tues.	8th	CACTOMANIACS "Machining Plastics"—Henry Triesler	8:00 P.M.
Wed.	9th	CLASS—Desert Plants	3:00 P.M.
Thurs.	10th	LECTURE—Arizona Birds & Animals	3:00 P.M.
Wed.	16th	CLASS—Succulent Plants	3:00 P.M.

(over)

10-73

1973-74 DESERT BOTANICAL GARDEN PROGRAM

Thurs.	17th	LECTURE—Arizona Scenics	3:00 P.M.
Wed.	23rd	CLASS—Culture of Succulent Plants	3:00 P.M.
Thurs.	24th	LECTURE—Collecting in Mexico	3:00 P.M.
Wed.	30th	CLASS—Desert Trees & Shrubs	3:00 P.M.
Thurs.	31st	LECTURE—Wildflowers of W. Australia	3:00 P.M.

FEBRUARY

Sat.	2nd	FIELD TRIP—Boyce-Thompson Arboretum	8:30 A.M.
Tues.	5th	CACTOMANIACS	
		"Biblical Coins"—John Eversole	8:00 P.M.
Wed.	6th	CLASS—Culture of Trees & Shrubs	3:00 P.M.
Thurs.	7th	LECTURE—Arizona Cacti in Flower	3:00 P.M.
Wed.	13th	CLASS DESERT TRIP—Vista Lookout	8:30 A.M.
Wed.	13th	ART ENTRIES DUE FOR THE 27th CACTUS SHOW	before 5:00 P.M.
Sat.	16th	ALL OTHER ENTRIES DUE FOR CACTUS SHOW	before 1:00 P.M.
Sun. thru	17th	27th ANNUAL CACTUS SHOW	Daily 9-5 P.M.
Sun.	24th		
Thurs.	28th	LECTURE—Arizona Wildflowers	3:00 P.M.

MARCH

Sat.	2nd	FIELD TRIP—First Water Ranch	8:30 A.M.
Tues.	5th	CACTOMANIACS	
		"Cacti Spines"—Robert Moulis	8:00 P.M.
Wed.	6th	CLASS—Desert Plants	3:00 P.M.
Thurs.	7th	LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Wed.	13th	CLASS—Succulent Plants	3:00 P.M.
Thurs.	14th	LECTURE—Arizona Birds & Animals	3:00 P.M.
Wed.	20th	CLASS—Culture of Succulent Plants	3:00 P.M.
Thurs.	21st	LECTURE—Arizona Scenics	3:00 P.M.
Wed.	27th	CLASS—Desert Trees & Shrubs	3:00 P.M.
Thurs.	28th	LECTURE—Collecting in Mexico	3:00 P.M.
Sat.	30th	CLASS—Flower Preservation	9:00 A.M.

APRIL

Tues.	2nd	CLASSES—Flower Preservation	9:00 A.M. & 1:00 P.M.
Tues.	2nd	CACTOMANIACS	
		"Herbs"—Mrs. Floyd Betts	8:00 P.M.
Wed.	3rd	CLASS—Culture of Trees & Shrubs	3:00 P.M.
Thurs.	4th	LECTURE—Wildflowers of W. Australia	3:00 P.M.
Sat.	6th	FIELD TRIP—Whitlow Dam	8:30 A.M.
Sat.	6th	CLASS—Flower Preservation	9:00 A.M.
Tues.	9th	CLASSES—Flower Preservation	9:00 A.M. & 1:00 P.M.
Wed.	10th	CLASS DESERT TRIP—Saguaro Lake	8:30 A.M.
Thurs.	11th	LECTURE—Arizona Cacti in Flower	3:00 P.M.
Thurs.	18th	LECTURE—Arizona Wildflowers	3:00 P.M.
Sat.	20th	CLASS—Flower Preservation	9:00 A.M.
Tues.	23rd	CLASSES—Flower Preservation	9:00 A.M. & 1:00 P.M.
Thurs.	25th	LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Sat.	27th	CLASS—Flower Preservation	9:00 A.M.
Tues.	30th	CLASSES—Flower Preservation	9:00 A.M. & 1:00 P.M.

MAY

Sat.	4th	FIELD TRIP—Sugar Loaf Mountain	8:30 A.M.
Sun.	5th	ANNUAL MEMBERS' MEETING	3:00 P.M.
Tues.	7th	CACTOMANIACS—Potluck Supper	6:30 P.M.

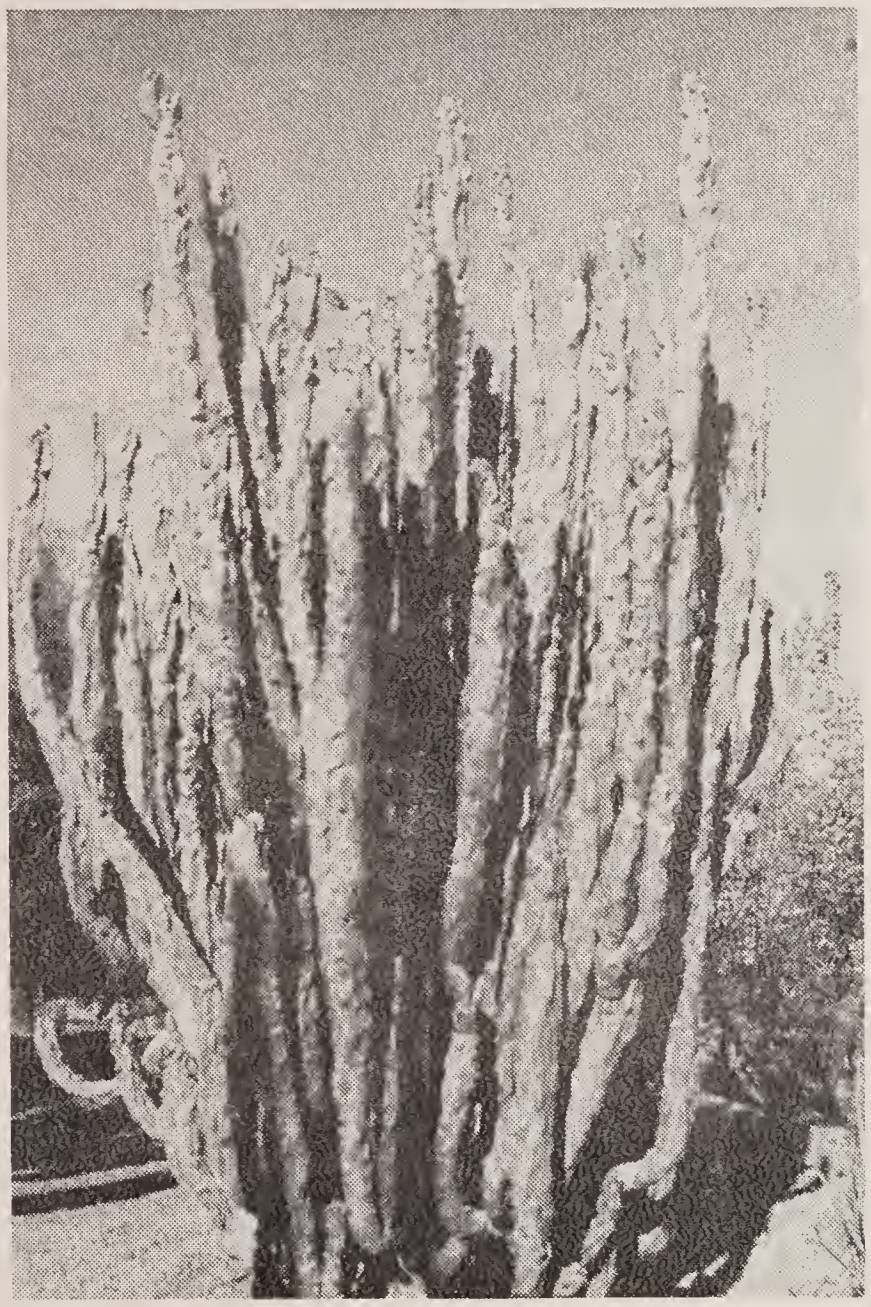
No CLASSES or LECTURES are given from May through October but the GARDEN is open daily 9 A.M. - 5 P.M. including weekends and holidays. For any additional information, telephone 947-2800.

(over)

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVII November, 1973 No. 9



REG-MANNING

SAGUAROLAND BULLETIN

Published and owned by the Arizona Cactus and Native Flora Society, sponsors of the Desert Botanical Garden of Arizona, P.O. Box 5415, Phoenix 85010. Saguaroland Bulletin attempts to promote the Garden and to provide information on the desert plants and their culture. Subscription $5.00 per year, the subscription including active membership in the Society and the Desert Botanical Garden. Issued 10 times a year.

W. HUBERT EARLE, Editor
LILLIAN DIVEN, Associate Editor

Volume XXVII | November, 1973 | No. 9

Arizona Cactus and Native Flora Society

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COVER: Slender Totem Pole (see page 106)

Desert Botanical Garden of Arizona

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Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Editor's Notes

Full fall activities got into the swing on October 6 with a Nature Trip to Bartlett Dam led by our Horticulturist Rodney Engard. Other trips later in the year will be to Canyon Lake, Apache Trail, Vista Lookout and First Water.

Participants meet at the Garden's parking lot and leave at 8:30 a.m., returning by 4:15 p.m. Members and friends are asked to pool their transportation, take along lunches and water, and wear hats and suitable clothing. There is always a minimal amount of "footwork" — easy hiking.

Wednesday, November 7th at 3 p.m. is the beginning of **our twentieth year of classes!** Over 2600 persons have enrolled to gain knowledge in "A Better Understanding of Desert Plants" (the title of the course) through five once-a-week classes plus an all-day desert field trip where they have the opportunity to identify plants used in the classes. Courses are repeated in the winter and the spring. Enrollment is free to members, but nonmembers must pay a fee of $5.00. Plants, seed and brochures are distributed free during classes. Phone 947-2800 to reserve a place in the classes, and do bring a neighbor or a friend. We encourage you to bring along any "strange" desert plants that you wish to have identified.

Thursday, November 9th, at 3 p.m. is the beginning of our free lectures for this 1973-74 season. They will be given in the Webster Auditorium. Subjects of the weekly lectures will be: Arizona Cacti, Arizona Wildflowers, Arizona Trees and Shrubs, Arizona Birds and Animals, Arizona Scenics, Collecting Plants in Mexico, and Spring Flowers in Western Australia (the last using slides from that wildflower paradise Your Editor visited).

The "Flower Preservers" elected officers last September and are meeting each month at the Garden. Janet Alsever is making arrangements to again conduct small classes in March and April to teach this enthralling art of flower preserving. Get your registration in now for the classes. Fee, including equipment, are $30.00 for Garden Members and $35.00 for non-members.

October saw the completion of a fireproof metal building south of the Herbarium for storage of publications that we have recently printed for wholesale and retail. To date we have it partially filled with 11,000 copies of "Cacti of the Southwest", 12,000 copies of "Cacti and Succulents and How to Grow Them", 4,000 Garden Nature Walks, and 64,000 postcards of the Garden. The removal of these items from shelves and cupboards in the Library and Herbarium now gives these two facilities needed storage space. The publications backlog will last the Garden one or two years before we have to reprint. For instance, 27,000 copies of "Cacti of the Southwest" have been sold to date.

Easterners' Yearnings: So many of our newly-arrived Easterners, accustomed to verdant woodlands and tree-lined streets, immediately begin planting large-leaf trees and shrubs around their new homes, and then they complain about the cost of

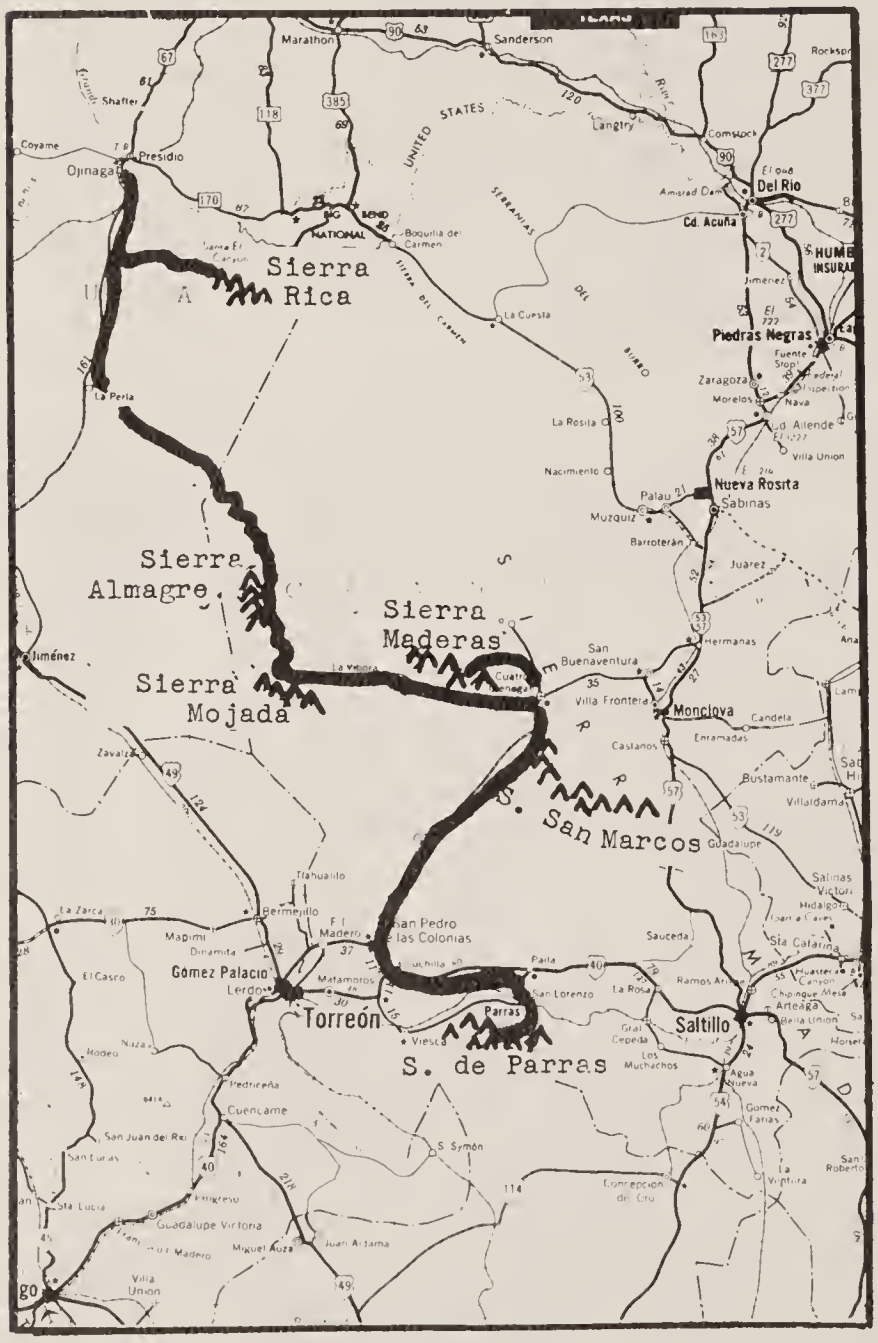
(Continued on page 108)

AGAVE EXPEDITION OF MAY, 1973*

by Howard Scott Gentry

In May of 1973 the writer and Rodney Engard went Agave hunting in the Coahuilan Desert of northern Mexico. Our principal objective was to explore the little-known region of the state of Coahuila which on road maps is a large vacant space (see map). There are, however, jeep and truck roads that give rough and dustry access to the scattered ranchos and disjunct mountains. Many of these trails can be followed by sight and intuition, so that most mountains, with springs or mines near the lower slopes, can be closely approached. The heights must be gained by foot and are rough and usually waterless.

We met Marshall Johnston of the University of Texas with two of his graduate students, Fernando Chiang and Tom Wendt, at Presidio, Texas, on May 2. Johnston is working on the flora of the Chihuahuan Desert, which includes the high arid region of northern Mexico between the Sierra Madre Oriental on the east and the Sierra Madre Occidental on the west. He is already familiar with the region, knows many roads, and recognizes many of the plants at sight. It was at his invitation that we were making this expedition, as he had asked the writer to prepare a treatment of the Agave family for inclusion in his flora. For two weeks the relatively lonely byways became alive with scurrying collectors and babbling botanists.



Map showing the route and the principal mountains visited on the May 1973 Agave exploration expedition.

We entered Mexico at Ojinaga, across the Rio Grande or the Rio Bravo from Presidio, Texas. From Ojinaga there is a new graded gravel road south to Camargo. At about 20 miles south of Ojinaga we took a side road to the Sierra Rica, where we camped. Along the north and westward slopes of this mountain we found extensive stands of the large and splendid **Yucca carnerosana, Y. rostrada, Dasylirion, Agave lecheguilla,** and a small, glaucous colony of **A. havardiana.** The flora is rather rich and consists essentially of the species existing in the Big Bend Region of Texas.

The next day we left the main road again at La Perla, a mining town, where gasoline and supplies are available and set off southeastward over the dry, warm, and dusty desert. Johnston led the way in his

Agave asperrima and *A. lecheguilla* on sandy plain near Parras, Coahuila.

Dodge power wagon. He stopped frequently to examine and gather plant specimens. These, I noted, were pressed en route by him or one of his students sitting in the front seat with a sheath of newspapers and press boards on the knees. Our way led through or past scattered igneous mountains and for perhaps a hundred miles we found no Agaves, not even the common **Agave lecheguilla**, which characterizes so much of the vast north Mexican desert (figure 2). The next morning we found a side trail that took us up on the bajada to the eastern foot of Sierra Almagre. This is an isolated limestone mountain, about 40 miles northward of the Sierra Mojada, well known as a botanical locality ever since the plant collections of Cyrus Pringle there in the 1890s.

From Sierra Almagre onward, the country rock was dominated by limestone, and members of the Agavaceae again became abundant. We collected Agaves, Yuccas, Nolinas, Dasylirions, a few Manfredas, and **Hesperaloe funifera**, quickly recognizable by its long, rakish leaves and tall panicles in fine flowering

state. Rodney Engard's sharp eye soon picked out **Peniocereus greggii**, contributing, I believe, an addition for Johnston's Coahuilan flora. In addition to the Sierras Rica, Almagre, and Mojada, three other large limestone mountains were visited on this expedition.

Sierra de las Maderas NW of Cuatro Cienegas is of easy access on the north side. A cattle-ranch road leads one deep into a canyon on the north side of the mountain to elevations over 4000 feet. Here were forests of oak, pine, and numerous communities of other trees and shrubs. Here we found **Agave parrasana**, **A. falcata**, and an unrecognizable Agave similar to the wide-spread **A. asperrima**. Unfortunately the unknown was in the asparagus shoot stage, and we will have to return some July to find flowering specimens for critical identification.

We also climbed Sierra San Marcos, just south of Cuatro Cienegas to find flowering specimens of a small Agave first located by Prof. Pinkava and students a few years earlier. This was a hard one-day hike, and I was unable to reach the highest peak where this Agave grows, but Engard, with great effort, continued and found the plant in bud stage. It proved to be **Agave parrasana** Berger, in a small form with atypically pointed ovate leaves. When Engard returned from his climb of the peak about 4 p.m., I handed him the canteen which still held a little water. Our last drink had been at noon. I noticed him lower the canteen and when he handed it to me I took a couple of good swallows, but there was not a good swallow left when I handed it back. Later on the long hike back to the car, Rodney was distressed by thirst and confessed that he had only wet his lips. I had inadvertently hogged the water that he needed far more than I did.

On top of Sierra de Parras, it became my turn to suffer. Unlike the other men, who had water-proof sleeping bags, I was soon wet and chilled by a thunder and hail storm in the early evening. While they slept soundly, I spent a sleepless night without shelter, shivering under a wet blanket, waiting that long wait for the poor man's blanket to come up over the horizon. It never did come, and we descended the mountain in mist and fog. But "mission accomplished"; we found flowering topotypic material of **Agave parrasana** as well as good specimens of the large, broad-leaved Agave, the asparagus-like shoots of which we had found being sold cooked as a country sweet in the Parras market. It proved to be **Agave macroculmis** described by Todaro of the botanical garden in Palermo, Sicily in 1878-1890. The origin of this Agave was not then known, but it is now known on the higher mountains of the Sierra Madre Oriental from Sierra San Marcos in central Coahuila south to the central state of Hidalgo.

One of the singular features of the Coahuilan Desert is the gypsiferous deposits scattered in and about the Cuatro Cienagas bolson. These are ancient deposits and many flowering plants, the so-called "gypsophytes" are endemic to them. **Fouquieria shrevei** is among these and we have made a good collection. Distinctly local in this region also, are species of fish in small ponds and lakes, certain reptiles as a small local tortoise, and several birds.

Professors at A.S.U., as Dr. Pinkava and Dr. Minckley, along with students, have made several trips in the area for detailed study of the plant and animal life. At Cuatro Cienegas, Dr. Johnston and students camped near one of the pools to enjoy swimming, but Rodney and I repaired to the local hotel to revel in the prosaic comforts of showers, clean sheets, restaurant meals, and cold drinks. We must, of course, return for more study of the Chihuahuan Desert Agavaceae, and we will be eager to do so. As Francis Bacon wrote, "by pains men come to greater pains," and such is the life of the botanist.

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*This expedition was made possible by Research Grant No. GB-3481X1 from the National Science Foundation, Washington, D.C.

ASPECTS OF THE DESERT

The Salt River, which flows through central Arizona and is used to irrigate vast agricultural areas, gets its name and its salinity from these natural salt springs located just downstream from the point where US 80 crosses the Salt River Canyon in Gila County.

GREEN GENTIAN
Swertia parryi
Gentianaceae

This genus, also known as Frasera, has four other species that grow in Arizona. One of them has blue flowers, but the rest, including S. parryi, have greenish flowers that are spotted, fringed, and altogether odd-looking.

S. parryi is noticeable the year round for the wavy white margins on the opposite leaves that clasp the stout stem. The plants, usually single-stemmed, are two to four feet tall.

Flowers are borne in large open panicles and are, in the technical term, 4-merous. This translates very loosely as "everything comes in fours" — four stamens, four calyx lobes, four corolla lobes. The flower is about two-thirds of an inch across, with four obtusely-pointed calyx lobes and four slightly longer corolla lobes that appear more sharply pointed because their edges roll in. The greenish-white lobes are scattered with black dots, and in the center of each is a u-shaped gland surrounded by a white fringe.

The much larger S. radiata (up to six feet tall) can be found in Arizona from

A three-feet-tall plant of *Swertia parryi* in its natural habitat.

Above: The black-spotted lobes of this Green Gentian are distinctive. Below: Equally striking are the wavy white leaf margins.

north-central to southeastern counties at elevations between 5,000 and 10,000 ft. **S. parryi** is much less common, found only in the southwest corner of the state. It grows at elevations between 1,500 and 6,000 ft. thus being, as far as is known, a plant of the Upper Sonoran Zone, only approaching the margins of the Sonoran Desert. It prefers dry locations in chaparral or pinyon-juniper associations. Flowering can be from April through July.

Distribution of this Green Gentian ranges from southern California and the western corner of Arizona down to the south end of Sierra San Pedro Martir in Baja California, Mexico. These photographs were taken in June, 52 miles west of Mexicali at an elevation of 4,000 ft. just south of the U.S.-Mexico border.

REFERENCES

Munz, A California Flora
Rickett, Wild Flowers of the United States, Vol. IV
Shreve & Wiggins, Vegetation and Flora of the Sonoran Desert

——LD

Arizona Cactus

BISCUIT PINCUSHION
Mammillaria applanata
Cactaceae

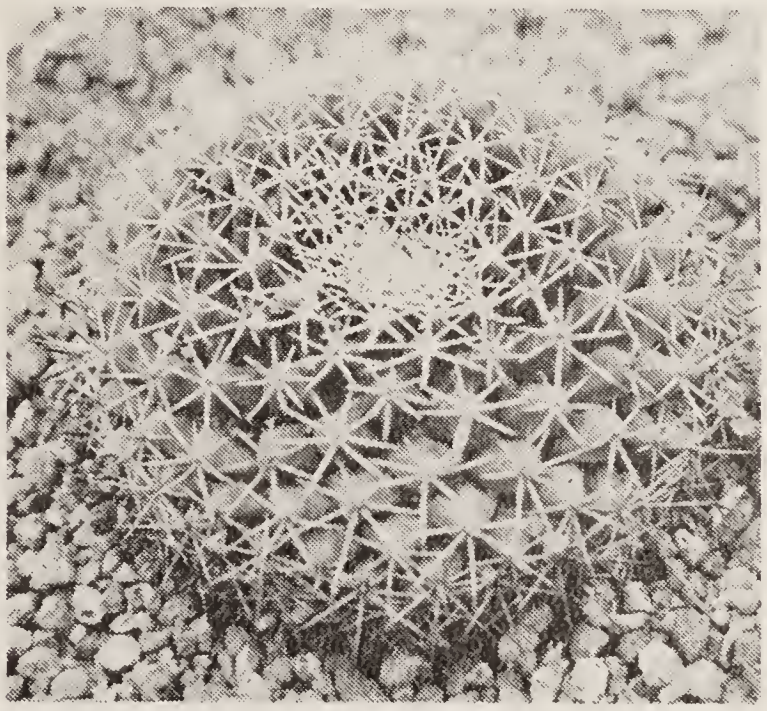
As you walk through our low hot desert, you are accustomed to looking into the sky at the tall Saguaros, and making detours around the Chollas, but as you roam through the higher desert grasslands in southeast Arizona you keep your eyes toward the ground for smaller cacti, and at times you are rewarded by finding **Mammillaria applanata** (the name means "flattened") hugging the ground under grasses and shurbs. They are hard to discern except at blooming time.

M. applanata was first described by Dr. Engelmann in 1848, and later acquired the specific names of **declivis, texensis, heyderi** and **lindheimeria.** Britton & Rose placed in their new genus Neomammillaria in 1923.

Dr. Lyman Benson (Cacti of Arizona, 1969) brought **M. applanata** up to date by setting up **M. gummifera** ("bearing gum"), found in the adjoining Mexican state of Chihuahua, and including in it, as varieties, **M. applanata, M. meiacantha** and **M. macdougalii,** as the species each had milky sap.

M. applanata is a low plant, up to four inches in diameter, barely protruding above the surface of the ground. Its apex is shallowly concave; tubercles subconical; one central spine, one-quarter of an inch long; 10 to 22 radial spines, three-eighths of an inch long; flowers pink to generally white, three-quarters of an inch in diameter; fruits scarlet, one-half to three-quarters of an inch long, edible; seeds brown.

This is an easy-to-grow plant, favoring a loose gravelly soil or a loose loam. Care should be exercised in handling it, as when the skin is broken or tubercles injured a



M. applanata is a pretty little cactus, but does it look like a biscuit?

milky juice is exuded and soon hardens into a latex-like scar.

Type locality: Rocky plains on the Perdenales River, Texas.

Distribution: Southeast Arizona (Cochise County), southwest New Mexico, Texas, and northern Mexico in rocky limestone soils and grasslands at 4000-4500 ft. elevations.

REFERENCES

Benson, Cacti of Arizona
Britton & Rose, Cactaceae
Earle, Cacti of the Southwest

——WHE

Mexican Cactus

SLENDER TOTEM POLE
Lophocereus Schottii forma mieckleyanus

Cactaceae

Much mystery surrounds this plant which first appeared, from some unknown source, in Germany in 1914. It grows only in one small out-of-the-way arroyo, about twelve miles northeast of a small out-of-the-way settlement named El Arco, which is in the middle of nowhere halfway down the Baja California peninsula. Before 1914 no place in Baja California was easy to get to by road or by sea, and none of the botanists who collected on the peninsula is known to have travelled in the area where the cactus is located. How it ever was found in those early years is unknown, yet when Howard Gates sent plants he had collected to Europe in 1934 they were readily identified as **Cereus mieckleyanus.**

The plant was first described in 1931 by Wilhelm Weingart and named for W. Mieckley, a cactus grower connected with the Botanical Garden in Dahlen. Weingart explains that a Mr. Heese received five specimens of a new cereus in 1914 but never found time to describe it. On his death the plants were distributed to three men, one of whom was Mieckley who, in turn, passed it on to Weingart for description. Mieckley was unable at this late date to discover the plant's country of origin.

Weingart, a serious student of the Cereae, suggested that the plant might be a member of the Lemaireocereus subgenus because of the structure of its epidermis. Borg, in 1937, transferred it to **Lemaireocereus,** saying, "Looks like a sport or monstrosity of **Lophocereus schotti,** but is very different from cristate or monstrous form of this species met with in cultivation."

Backeberg and Knuth (1935) listed **Lo-**

Roots from on the undersides of branches form several feet above the ground.

phocereus (?) mieckleyanus Wgt. 1932 (1931, correctly). Marshall (1958) used the name **Lophocereus schottii** forma **monstrosus mieckleyanus** without citing an authority or intention of proposing a new combination or including a Latin diagnosis to validate the name.

Dr. George Lindsay published a monograph on the genus Lophocereus in Cactus & Succulent Journal, Vol XXV No. 6, Nov.-Dec. 1963 in which he states, "It is clear that the plant of Rancho Union (12 miles northeast of El Arco) is not a species or variety but rather is a monstrose form of **Lophocereus schotti var schotti.** I am unable to prove whether it is or is not **Cereus mieckleyanus.** Correctly or incorrectly, the epithet **mieckleyanus** is now generally associated with this plant; and in absence of proof that the association is incorrect, it seems desirable to retain the epithet.

"Since any new combination based on **Cereus mieckleyanus** would only perpetuate the uncertainty as to its typification, the plant of Rancho Union is described as a new form with a new type but reusing the same epithet." Lindsay sets up the form as **Lophocereus schottii** forma **mieckleyanus,** forma nova, with an accompanying Latin description.

L. schottii forma **mieckleyanus** is a slender-stemmed plant resembling **L. schottii** forma **monstrosus** which is found growing a few miles north of El Arco. Its yellow-green slender stems have an extensive branching habit that creates a compact plant up to nine feet tall and four feet in diameter. The stems have no ribs but slight protuberances on the lower portions of the stem. Stems arise from the base of the plant and many branches form, from which hang many adventitious roots. Spines are absent except for some bristle-like spines on the upper portion of the stem in the flowering area.

Flowers are a light pink and are abundant, many emerging from the same areole. Fruits and seed have not been observed.

At left, forma *monstrosa,* the common Totem Pole. Note the thinner stem and only slight protuberances on forma *mieckleyanus* at the right.

Animals do not nibble at the plant, as alkaloids in the epidermis have a repellent taste.

This is an easy plant for the desert gardener to handle because of the absence of spines. The plants vegetate rapidly due in part to the adventitious roots. They can withstand extremely high desert heat. Cuttings should be healed, then planted and not watered until after growth starts. In a year or two the stem will be growing well with possibly several new offsets at the base. Its curiosity is an addition to your collection.

Type Locality: El Arco, Baja California, Mexico.

Distribution: Same.

REFERENCES

Bakeberg, Die Cactaceae
Lindsay, C&SJ XXXV No. 6
Weingart, M. DKG 3:189

—WHE

Editor's Notes

(Continued on page 99)

keeping the plants alive, little realizing that they are fighting our desert environment.

Our Sonoran Desert, or Microphyll (small-leaf) Desert has such low humidity that over the past ages it has developed specialized plants that have small leaves, some covered with minute hairs, others coated with resin, all formed to withstand low humidity and scant rainfall. The Ocotillo, for example, has developed the mechanical means to squeeze off leaves during dry periods to conserve moisture in its stems.

Many of our "new westerners" knock themselves out by planting both winter and summer lawns, each requiring a different species of grass. (They only had one lawn a year back east.) Needless to say, a neatly mowed and clipped lawn is lovely, but think of all the time, mowing, insecticides, etc., needed through the year to keep a lawn in good condition.

A lawnless yard is so easy to maintain, and it fits into our desert setting, though it may take a newcomer a season or two to get used to. You need a base of decomposed granite into which you plant your few cacti, desert trees, yuccas, ocotillo and century plants. Clean and rake around them about three or four times a year, replace any dead plants — and relax!

For a small yard or patio, the early Spanish used a pool surrounded with a paving of tiles, and a few plants set around the area in colorful pots — no mowing of grass for them.

Years ago medical advice to asthmatics and sinus sufferers was to move west to a low-pollen climate. With the introduction of so many exotic trees during the past thirty years the pollen from these trees has increased our area's pollen count close to that of eastern areas. The dryness of our area keeps pollen suspended in the air longer than in humid areas, and the dry pollen is much more irritating to the nose and throat. It all reminds me of the old joke about the fellow who came to Arizona for asthma — and got it.

GARDEN ACTIVITIES

NOVEMBER

Thurs.	1st	LECTURE—Arizona Cacti in Flower	3:00 P.M.
Tues.	6th	CACTOMANIACS "Metal Containers"—Fred Baselt	8:00 P.M.
Wed.	7th	CLASS—Desert Plants	3:00 P.M.
Thurs.	8th	LECTURE—Arizona Wildflowers	3:00 P.M.
Sat.	10th	FIELD TRIP—Apache Trail	8:30 A.M.
Wed.	14th	CLASS—Succulent Plants	3:00 P.M.
Thurs.	15th	LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Wed.	21st	CLASS—Culture of Succulent Plants	3:00 P.M.
Thurs.	22nd	LECTURE—Arizona Birds & Animals	3:00 P.M.
Wed.	28th	CLASS—Desert Trees & Shrubs	3:00 P.M.
Thurs.	29th	LECTURE—Arizona Scenics	3:00 P.M.

DECEMBER

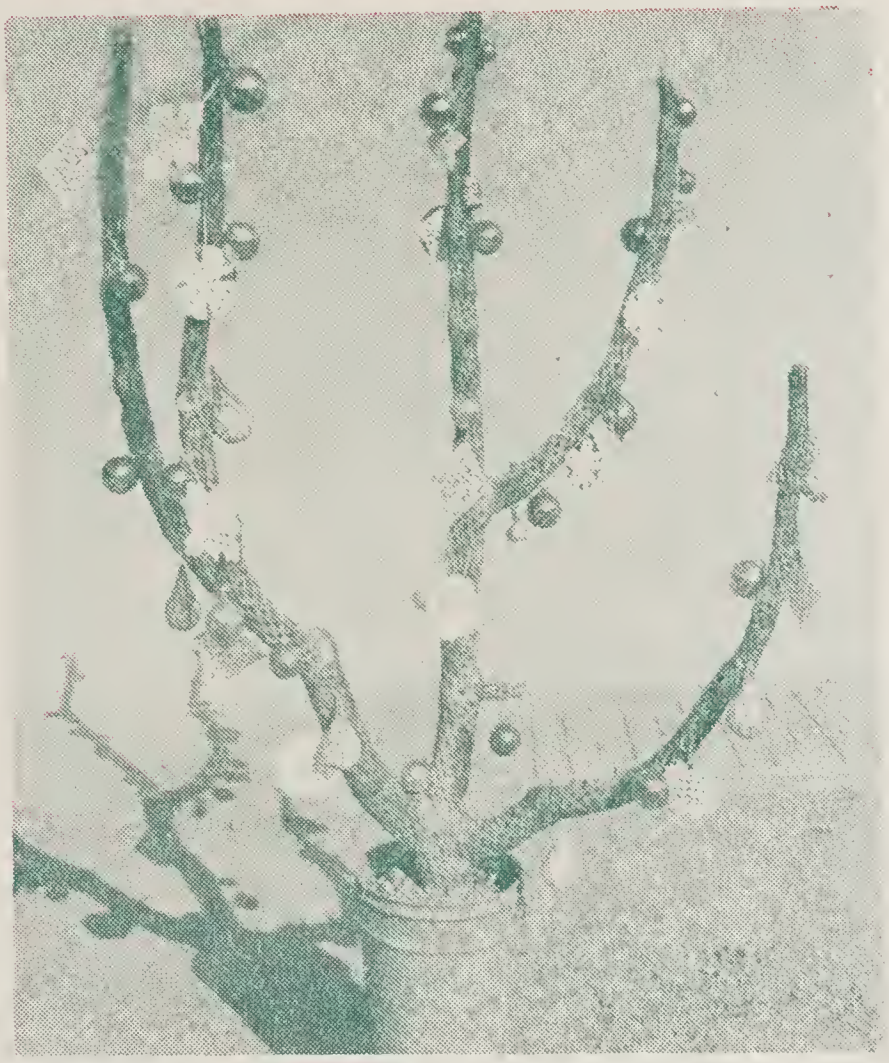
Tues.	4th	CACTOMANIACS "Know your Soil"—Dr. Ivan J. Shields	8:00 P.M.
Wed.	5th	CLASS—Culture of Trees & Shrubs	3:00 P.M.
Thurs.	6th	LECTURE—Collecting Plants in Mexico	3:00 P.M.
Sat.	8th	FIELD TRIP—Canyon Lake	8:30 A.M.
Wed.	12th	CLASS DESERT TRIP—Pinnacle Peak	8:30 A.M.
Thurs.	13th	LECTURE—Wildflowers of W. Australia	3:00 P.M.
Thurs.	20th	LECTURE—Arizona Cacti in Flower	3:00 P.M.
Thurs.	27th	LECTURE—Arizona Wildflowers	3:00 P.M.

SAGUARO LAND BULLETIN

DESERT BOTANICAL GARDEN of ARIZONA

Vol. XXVII December, 1973 No. 10

Season's Greetings



REG MANNING

SAGUAROLAND BULLETIN

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Garden Open Daily 9 A.M. - 5 P.M. Including Holidays

Our Garden's plants and people wish all of you

Mesquite

Elephant tree

Rainbow cactus

Rabbit-brush

Yucca

Creosote bush

Hummingbird bush

Rock daisy

Indian wheat

Saguaro

Teddybear cactus

Mariposa lily

Apache plume

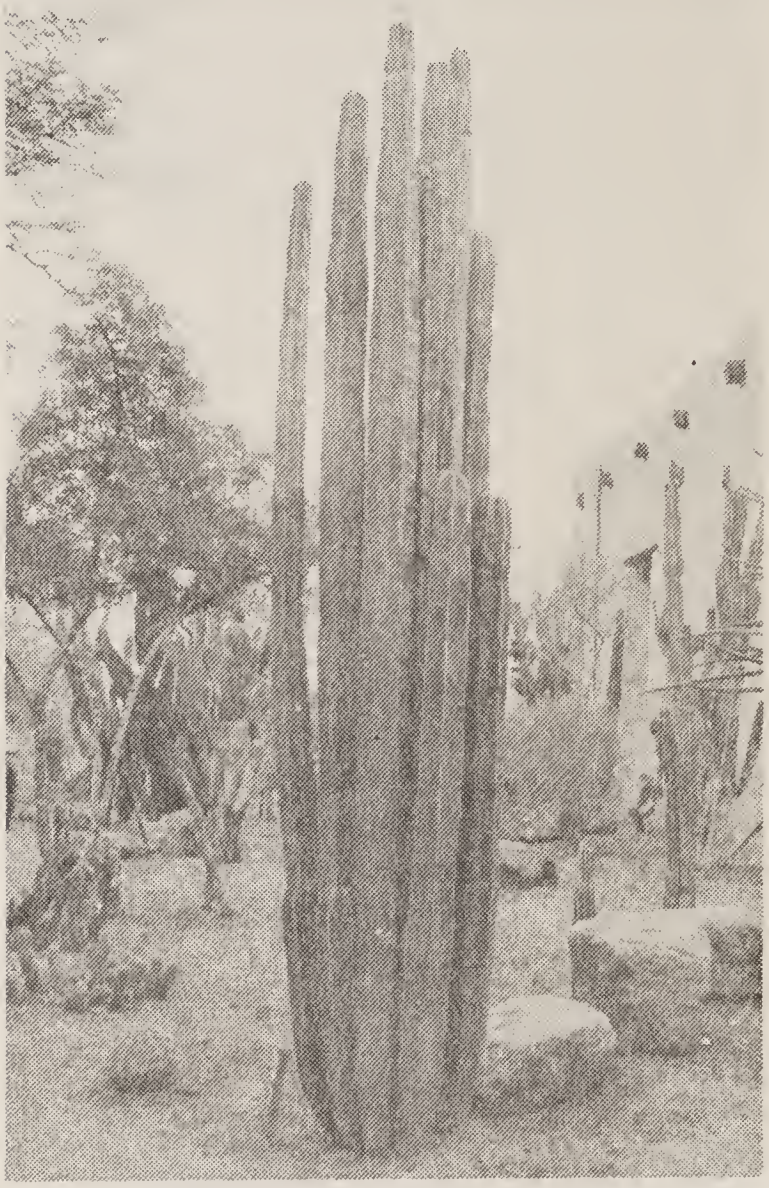
Sand verbena

—and a Happy New Year, too.

The Staff and Volunteers

Mexican Cactus

ORGAN PIPE, ORGANO
Lemaireocereus marginatus
Cactaceae



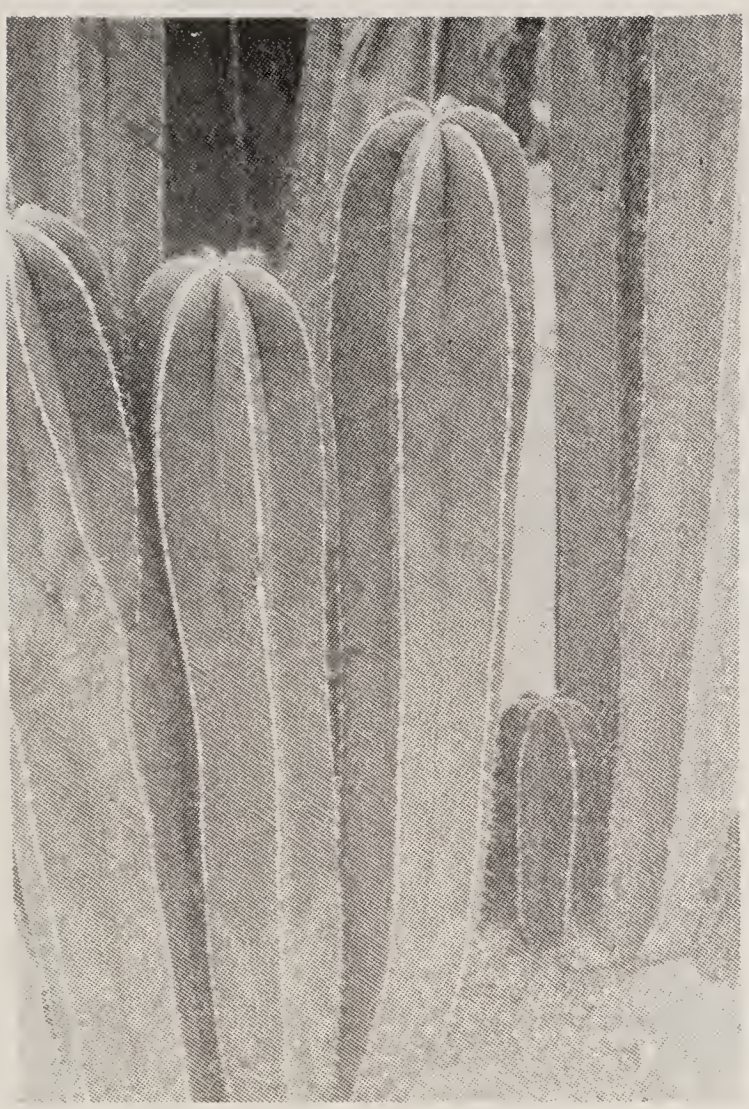
Lemaireocereus marginatus 10′ tall

This tall, slender, "clean"-appearing cactus, showing very few spines on its margins, was described by De Candolle in Mem. Mus. Hist. Nat. Paris in 1828 as **Cereus marginatus**. Britton & Rose set it up as **Pachycereus marginatus** in 1909. In 1929 Berger assigned the plant to the genus Lemaireocereus, and Borg in 1937 showed it as **Lemaireocereus marginatus** "from Berger's Kakteen". Neither Berger nor Borg gives a reason for this classification, but in Cactaceae (1941) Marshall indicated that since **L. marginatus** flowers are diurnal, small, and typical of the genus Lemaireocereus, and the edible fruits are typically small and naked when ripe, this cactus properly belongs in that genus.

Several cacti are called Organ Pipe, or Organo, because of their general shape. The familiar native Arizona Organ Pipe is **L. thurberi**.

L. marginatus was originally found in parts of central Mexico and has now naturalized practically throughout temperate central Mexico because it is widely used. It is easy to handle and is popularly used to make impenetrable hedges around homes, farms and pastures.

Typical new growing stem 3½″ thick of *Lemaireocerus marginatus*



Three year old stems rising from base of *Lemaireocereus marginatus*, ready to be removed to form new plants

On several trips into central Mexico we have tried to locate original stands of this plant in its native habitat, but we are still not absolutely certain that we have found any, because the plant adapts itself so readily to any area where cuttings are accidentally dropped.

The plant is exceptionally attractive when it is grown as a solitary specimen. Its fifteen to twenty stiff dark green stems will grow as tall as twenty feet. The stems have four to six (sometimes eight) ribs, each four to six inches thick. Margins have closely-set areoles. In cultivation, the spines are ¼ inch long, but in the wild they are up to ¾ inch long. The central spine is accompanied by about seven radials, all usually reddish changing later to brownish.

The short one-inch to two-inch flowers are bell-shaped, up to three-quarters inch in diameter, naked, diurnal and pink to white, followed by smooth one-inch red edible fruit bearing shiny black seeds.

This fast-growing plant can be easily propagated by taking cuttings from the parent plant. Short pieces, two to three feet long, root much more easily than long stems. Cuttings should be sulphured and not planted until well-callused (two to three weeks later). Do not water until new roots appear. Broken pieces can be laid on the ground in a shaded area and will produce many "pups" along the stem. The "pups" send down roots into the soil, and then can be gently removed from the original stem and replanted.

Type locality: Mexico.

Distribution: Central states of San Luis Potosi, Queretaro, Guanajuato, Hidalgo; Tehuacan(?).

REFERENCES:

Borg, Cacti
Bravo, Las Cactaceas de Mexico
Britton & Rose, The Cactaceae

——WHE

Arizona Wildflower

BALL MOSS
Tillandsia recurvata
Bromeliaceae
Pineapple Family

Epiphytes are a striking feature of tropical rain forests. Countless numbers and kinds grow profusely on tree trunks, branches, fallen logs, and derive their moisture not from their plant hosts (they are not parasites) but from the warm humid air. They include tropical ferns, orchids, cacti and bromeliads — this last being the family that also includes the pineapple and the familiar Spanish Moss.

Would you expect a plant of that sort to grow in Arizona? It does. It is Ball Moss, Tillandsia recurvata, and it is found on Live Oak trees in the desert grasslands of southern Arizona. It is the only epiphytic flowering plant found in Arizona.

Ball Moss (which is not a moss, of course) is a dense mass of twiggy stems and narrow leaves with curved tips, a ball two to six inches in diameter. It survives in the very dry and sometimes cold oak-grassland habitat because its leaves are covered with minute scales which absorb every possible bit of moisture from the air when moisture is present, and retard loss of water in the frequent dry periods.

You can find Ball Moss growing on oak trees (**Quercus emoryi** and **Q. toumeyi**) in two locations in Santa Cruz County: near Ruby, which is west of Nogales, and in the Patagonia Mountains south of Fort Huachuca. Elevations are between 4000 and 5000 feet.

A clump of *Tillandsia recurvata* in flower and attached to a mesquite tree branch

This is a stiff plant, with awl-shaped leaves two to six inches long and recurved. The flowers are minute, blue-violet, and grow in a short spike. The fruit is a prismatic capsule.

Ball Moss is more of a curiosity than a decorative plant, but it has been grown in greenhouses since 1783.

Distribution: In Arizona, Santa Cruz County. Elsewhere, from Florida to Texas and south to northern Argentina and Chile.

REFERENCES:

Correll & Johnston, Manual of Vascular Plants of Texas
Kearney & Peebles, Arizona Flora
Rickett, Wild Flowers of the United States, Vol IV
Royal Horticultural Society Dictionary of Gardening

——LD

ASPECTS OF THE DESERT

Christmassy red and green are a year-round color combination in the spectacular "Red Rock Country" of Oak Creek near the Verde River valley in north central Arizona. This is one of the most photographed areas in our very photogenic state of Arizona.

Arizona Cactus

WOOLLY-HEADED BARREL
Echinocactus polycephalus

Cactaceae

The dry dismal portions of the desert east of Yuma, along both sides of the Mexican border, is one home of **Echinocactus polycephalus** (many-headed). It's hard to believe that a plant can live in such a dry area, nearly covered with wind-blown sand, soil and debris. This barrel cactus is also found in scattered localities along the Colorado River and in Nevada and Utah.

The plant begins as a single plant but in years it will become a mound nearly two feet high and at least four feet in diameter, consisting of nearly thirty heads, each six to twenty inches long and eight to ten inches across, heavily spined. The body is concealed by one to four stout red central spines, each two to three inches long and covered with a gray pubescence that can be peeled off. The six to eight radial spines are similar to the curved centrals, except that they are straight and quite a bit smaller.

The plant in its juvenile stages is not woolly, as the common name would suggest, but as it begins to flower wool does develop in the meristem area.

Yellow flowers emerge from the woolly head in May, and are followed by woolly fruits about an inch long and a half-inch in diameter. Seeds are black and reticulate.

E. polycephalus was described by Engelmann and Bigelow in Engelmann, Proceedings American Academy 1856 and is one of the few cacti that have retained their original classifications — 117 years without a change. It is found in rocky and gravelly soils of slopes, fairly level desert sandy soils, and clay valley soils of the Sonoran and Mojave Deserts.

A small clustered plant of *Echinocactus polycephalus* 30 inches in diameter

Very large clumps of this cactus have been consistently vandalized, and the only remaining ones are found on state, government or Indian lands. The clumps are slow growers, need long periods of dryness and very little moisture at any time. Those in cultivation should be very seldom watered. For cactus gardens, heads can be cut away from a clump, sulphured, callused, and then planted. New roots will begin to show in two to three months, usually in spring and summer.

Type location: Along the Mohave River, California.

Distribution: Southwest Arizona, southeast California, northwest Arizona, Nevada, Utah.

REFERENCES:

Benson, Cacti of Arizona
Britton & Rose, Cactaceae
Earle, Cacti of the Southwest

——WHE

Arizona Plants

WRIGHT'S BUCKWHEAT

Eriogonum wrightii
Torr. ex Benth.

Buckwheat Family
Polygonaceae

A common sight in the Arizona uplands between June and October is the erect shrub, **Eriogonum wrightii** Torr ex Benth. It is a plant of open exposures on coarse, often alluvial, soils between 3000 and 7000 feet elevation.

The flowers are borne on erect to ascending sparsely leaved stems between 30 and 60 cm high. The caespitose, white tomentose stems originate from a woody perennial rootstock. Older branches have a shredding reddish bark. The oblanceolate to elliptic leaves are 3 to 6 mm broad and 1 to 2 cm long with undulate to plane margins. Leaves occur largely on the lower portions of the stems and appear quite congested. The leaves may be short petiolate (2 to 6 mm) to subsessile.

Flowers occur several in each involucre on short filiform pedicels. Flowers are 2.5 to 3.5 mm long, white to pink, and glabrous. Calyx lobes are obovate and rounded at the apex. The sessile involucres in turn are congested at the distal end of the stems. The fruit is a stout, beaked achene.

The only economic value is for erosion control and food for cattle and deer.

As it is not a spectacularly handsome species unless observed under magnification, its cultural requirements in low desert areas are not well known. Sowing of seed in the fall on coarse granitic soil that is kept moist and protected from birds should, however, result in establishment. Perennial **Eriogonum spp.** are suitable on dry sites as ground covers and erosion controllers.

The dainty flowers of *Eriogonum wrightii* enlarged three times.

DISTRIBUTION: Colorado west to southern California and perhaps Baja California; throughout Arizona and south into the Mexican states of Sonora, Chihuahua to San Luis Potosi; the type locality is in western Texas.

REFERENCES

Kearney and Peebles, Arizona Flora
Shreve and Wiggins, Vegetation and Flora of the Sonoran Desert
Stanley, Trees and Shrubs of Mexico, Vol. II

—RGE

CEREAL FROM THE SEA

Zostera marina is found along the coast from Bahia Kino to about 25 miles north of Isla Tiburon, 45 miles west of Hermosillo, Sonora

A new source of food from the sea has a connection with cactus. It is hard to think of an odder combination, but the Seri Indians, who live between the Gulf of California and the harsh desert of northwest Sonora, traditionally mix the two.

The ingredients are seeds of the Cardon cactis (**Pachycereus pringlei**) and seeds of the Eelgrass that grows in shallow coastal waters.

The food value of cactus seeds (part of the diet of many Southwest Indians) has been known for years, but the potentialities of eelgrass have come under examination only recently, in the search for more food for an expanding world population.

The world has thousands of shoreline miles in the temperate zones, and many of these shoreline coves and shallow coastal waters could support the cereal Eelgrass, **Zostera marina**, which has been used for centuries by the Seri Indians on the west coast of the state of Sonora, Mexico, above the town of Kino Bay.

Dr. Richard Felger of the Environmental Research Laboratory, University of Arizona, and Mary Beck Moser, expert in Indian languages, University of North Dakota, have published a most interesting report on the subject in **Science** July 27, 1973, Vol. 181, No. 4097.

Zostera marina is the only known cereal growing in salt water that is used as human food. It has a good potential as a food source, as its culture does not require fresh water, pesticides, or artificial fertilizers, and this is a boon to a world that is increasing in population and prospecting for new sources of food.

Eelgrass is low in fat content. The protein and starch contents compare favorably with terrestrial grains. The flour is bland to the taste, but the Seri mix it with the oil-rich seeds of the Cardon for flavor.

Zostera marina is one of about six species in the genus, and occurs in pure stands along the coasts of North America and Eurasia. It is one of the several groups that produce flowers underwater. The plant has long slender leafy stems and tuberous roots. The increasing water temperature in springtime causes the stems to separate from the roots and float to the surface of the sea.

A heavy stand of Eelgrass is in the Infernillo Channel between Tiburon Island and the mainland of Sonora. Through April and early May the stems accumulate and then float in great masses to the shore. There, the Seri wade out into the water and pull the stems to dry land, where they are dried on the beach.

After several days of drying, the stems are threshed with wooden clubs, then rolled between the hands to loosen the fruit. The fruit is then winnowed by the women of the tribe. Some of the grain is stored, to be eaten during the fall rains. The grain is roasted and then cracked to remove the shell. Chaff is removed by winnowing again, and the grain is ground on a metate to produce a flour to which water is added to make either a thin or a thick gruel. Because of the bland taste of the flour, it is sometimes eaten with turtle oil or honey.

The Seri state that Eelgrass is a favorite food of the green turtle **Chelonia mydas** and gives its flesh a sweet, rich flavor, while the green turtles of the west coast of Tiburon that eat algal seaweeds have an evil-smelling flesh.

The role of Eelgrass in the Seri culture indicates that it has been used for centuries, even though it is not mentioned in early botanical surveys of that region. The Seri claim that early in this century there was a great amount of Eelgrass in the bay at El Desemboque, about twenty-five miles north of Tiburon. It had disappeared by 1940, but in the spring of 1970 it reappeared.

Ruppia maritima is also found in the shallow sea water along with **Zostera marina.** Specimens of the latter were deposited at the Los Angeles County Museum in 1944 and erroneously identified as **R. maritima,** but this is a plant never used by the Seri.

An interesting note is that Dr. Felger, co-author of the above report, collected many succulent plants for the Desert Botanical Garden in the early 1950s and has long been a dedicated collector in our deserts.

——WHE

YUCCAS INDOORS

We Southwesterners see yuccas growing in the desert, we use yuccas frequently in landscaping — and we just don't think of yuccas as house plants.

That's a pity, because yuccas have a lot going for them as house plants today:

1. They thrive in the low humidity that is the bane of most house plants.
2. They welcome the strong light and exposure to the sun that's a common condition in today's big-window, glass-door houses.
3. Their strong silhouettes and textures go handsomely with today's style of decor.
4. They combine attractively with your potted cacti.
5. And they're a nice change if you're getting awfully tired of philodendron.

If you bypass certain native yuccas that absolutely require the intense desert sunlight (**Y. elata** or **Y. baccata,** for example), you can take your pick of a number of yuccas that will do well indoors with a minimum of care. Here are four available yuccas to consider.

Y. aloifolia, with leaves 1 to 2 inches wide, up to two feet long, soft-tipped. **Y. elephantipes,** leaves 2 to 4 inches wide, to 4 feet long, fast growing. **Y. gloriosa,** leaves 2 inches wide, to 2 feet long, soft-tipped, fast growing. **Y. recurvifolia,** leaves 2 inches wide, to 3 feet long, recurved. There are others with finer or broader leaves, with variegated leaves, with leaves edged with long white threads — enough variety for any setting.

Yuccas grown indoors need good drainage and good-sized pots to hold the bulky stems and tuberous roots. Watering should be done by drenching the pot and then waiting until the soil is nearly dry before watering again. Light is the most important "health factor", and if your yucca is moved out into the patio every six months or so for a few weeks of sunlight it will benefit.

The only likely pest would be spider mite. Spray occasionally as you would other plants.

Propagate new plants by removing offsets and repotting them immediately.

—L.D.

A detail of the skeletonal wood of *Cylindropuntia fulgida* (chain-fruit cholla) with colored paper stars made by Nevelyn Hopkins and Genevieve Oppen who decorated five 'trees' for the Garden's holiday season.

GARDEN ACTIVITIES

DECEMBER

Tues.	4th	CACTOMANIACS "Know your Soil"—Dr. Ivan J. Shields	8:00 P.M.
Wed.	5th	CLASS—Culture of Trees & Shrubs	3:00 P.M.
Thurs.	6th	LECTURE—Collecting Plants in Mexico	3:00 P.M.
Sat.	8th	FIELD TRIP—Canyon Lake	8:30 A.M.
Wed.	12th	CLASS DESERT TRIP—Pinnacle Peak	8:30 A.M.
Thurs.	13th	LECTURE—Wildflowers of W. Australia	3:00 P.M.
Thurs.	20th	LECTURE—Arizona Cacti in Flower	3:00 P.M.
Thurs.	27th	LECTURE—Arizona Wildflowers	3:00 P.M.

JANUARY

Thurs.	3rd	LECTURE—Arizona Trees & Shrubs	3:00 P.M.
Sat.	5th	FIELD TRIP—Seven Springs	8:30 A.M.
Tues.	8th	CACTOMANIACS "Machining Plastics"—Henry Triesler	8:00 P.M.
Wed.	9th	CLASS—Desert Plants	3:00 P.M.
Thurs.	10th	LECTURE—Arizona Birds & Animals	3:00 P.M.
Wed.	16th	CLASS—Succulent Plants	3:00 P.M.
Thurs.	17th	LECTURE—Arizona Scenics	3:00 P.M.
Wed.	23rd	CLASS—Culture of Succulent Plants	3:00 P.M.
Thurs.	24th	LECTURE—Collecting in Mexico	3:00 P.M.
Wed.	30th	CLASS—Desert Trees & Shrubs	3:00 P.M.
Thurs.	31st	LECTURE—Wildflowers of W. Australia	3:00 P.M.